

**'We want Notes'**

Manufacturer nixes corporate Exchange rollout to retain Notes groupware functions. 47



Morton Petersen

**Sweating out year 2000**

IT managers and others tell us what's keeping them up nights as '99 dawns. 60



# COMPUTERWORLD

The World's Technology Newspaper  
www.computerworld.com  
December 21, 1998 • Vol. 32 • No. 51 • \$4/Copy

## The Escrow Mirage

You have mission-critical source code that you and your vendor agree to put in the hands of a neutral third party. You all agree on how you can get at the code. But it's not that easy, experts say. Such software escrow arrangements are so full of pitfalls that the experts say many companies enjoy little real protection. In Managing, senior editor Gary H. Anthes shows you how to make the best possible escrow deal. Page 58

Amoco's G. Geoffrey Wood: Won't do an escrow deal unless the company has the sole right to decide when software can be released

By David Orenstein

FINDING YEAR 2000 problems on desktop PCs is a taxing, time-consuming job, but users are confident they don't have many to find.

"The number of applications with actual flaws [is] very small," said Doug Bowman, who's managing the end-user application effort at Barclays Global Investment NA in San Francisco. The bad news, he said, is that finding those flaws is still crucial and very time-consuming.

"You just don't know if you've gotten everything," said Tom Farrington, who's leading Amoco Corp.'s year 2000 efforts. The company is about 95% done fixing its desktop operating systems software and about

90% of the way through its office and custom-built applications. Still, small pockets among tens of thousands of independent computers can elude an inventory and the compliance status of products can be hard to nail down.

Despite the hand-wringing going on in the data center, most users surveyed by *Computerworld* last week said they don't expect fixing desktop PCs and software to be tough work. Of 102 companies with more than 100 employees, 73% PCs, page 86

How are you approaching the year 2000 problem for desktop PCs?



- Replacing computers and programs
- Upgrading or fixing computers and programs
- Combination of both
- Other

Base: 102 IT managers at companies with 100 or more employees

Source: Computerworld Information Management Group, Framingham, Mass.

## New to ERP? Better watch out

► Application add-ons test unprepared users

By Craig Stedman

APPROACH WITH caution. Keep your eyes open. And know your own limits.

That's the advice of experienced users and analysts for companies that are looking at enterprise resource planning applications tailored for industries beyond traditional manufacturing sectors such as chemicals, pharmaceuticals and electronics.

The software rollout prob-

lems that have recently bedeviled some early users of vertical-industry packages from SAP AG underscore the complexity of installing ERP systems, especially new products that haven't been widely used yet [CW, Dec. 14].

"Don't underestimate the size of the project or the time it will take to get things up and running," said Dan Zirbes, information technology manager at Mercedes-Benz U.S. International Inc. in Vance, Ala. "It's a huge job, and it involves everybody in the company."

ERP, page 87

## Users shrug off unified phone, fax and E-mail

By Roberta Fusaro

THE VARIETY AND ubiquity of E-mail in business, together with growing dependence on it, should be firing up the almost 3-year-old market for unified messaging.

But corporate messaging managers aren't buying technology that can collect fax, E-mail and voice mail in one box — and may not for a while, some analysts said.

"1998 wasn't the year of unified messaging, and it doesn't look like 1999 will be, either," said Boryana Marova, an analyst at New York-based research firm Frost & Sullivan.

Unified messaging, page 87

## Click here for your Rx

► Drugstores head for E-commerce frontier

By Sharon Machlis

TWO NEW INTERNET ventures are betting that consumers will replace some trips to the local pharmacy with orders on the Web.

"The drugstore is going to be the next great battlefield in E-commerce," said Kevin Werbach, managing editor of the

computer industry newsletter "Release 1.0" in New York.

The ventures are hoping that convenience, pricing and selection will encourage people to order prescriptions — as well as other medical, health and personal-care products — online. "It's the sweet spot of the drugstore," said Stephanie Schear, vice president of business development at PlanetRx Inc. in South San Francisco, Calif.

Drugstores, page 16

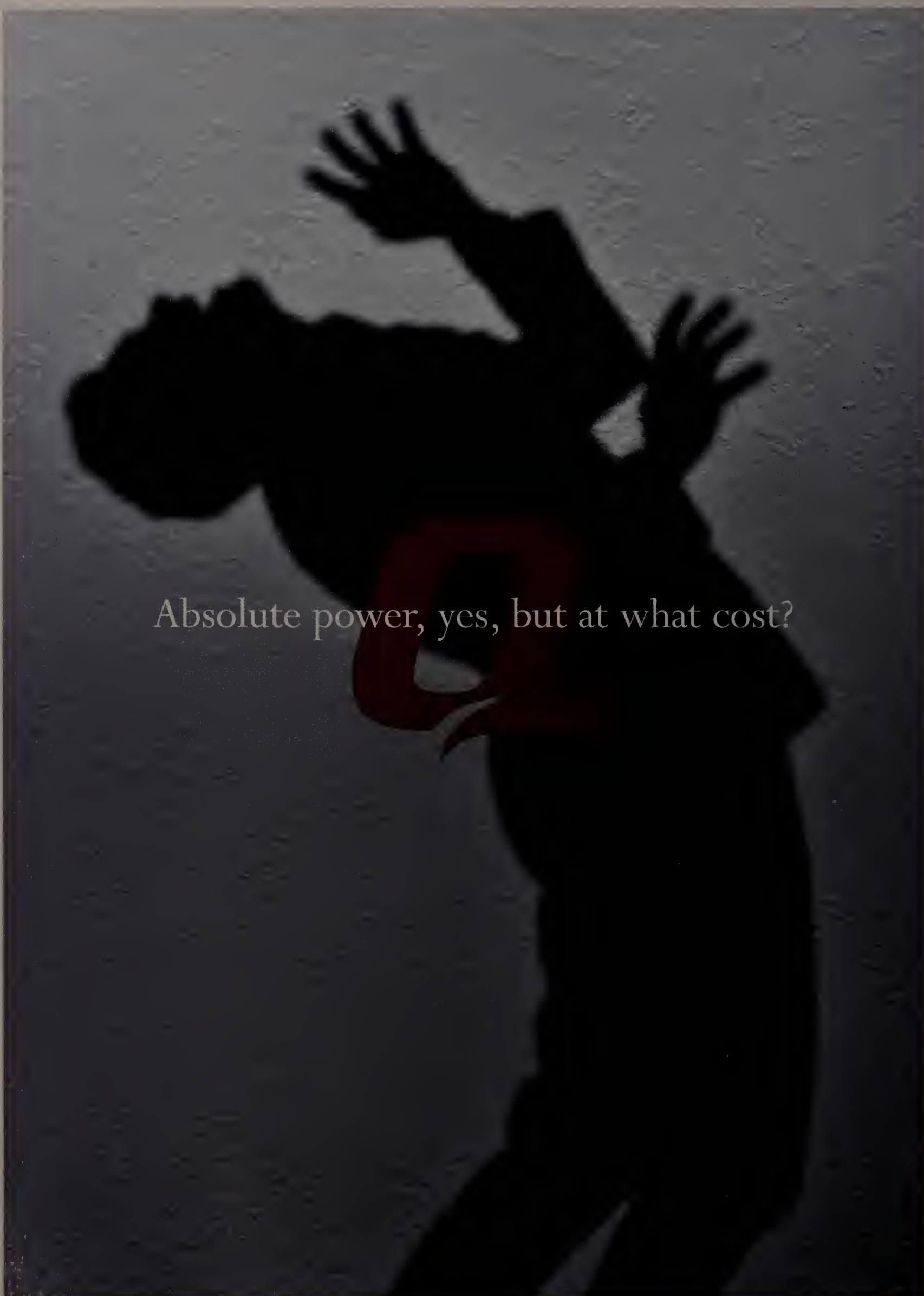
**The price is right — or is it?** Most businesses set prices by tacking on a markup or aping competitors.

But IT is launching an era in which prices can be adjusted minute-by-minute to maximize revenue, profit — even customer loyalty. Take a look at the systems that are ending the age of uniform pricing. In Depth, page 65

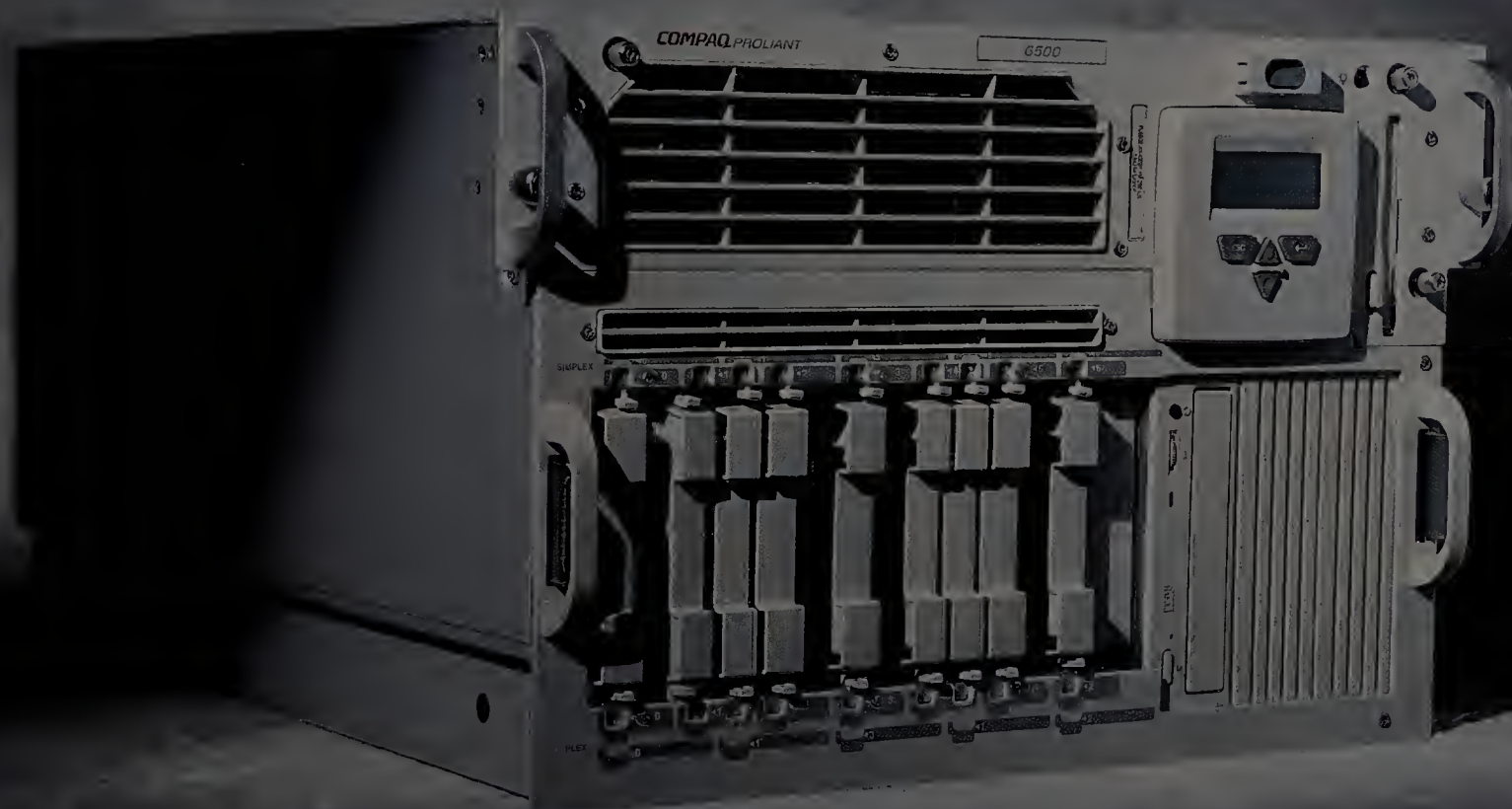


Robert Williams (right) and Frank Holowach of smart-pricing leader Progressive Insurance





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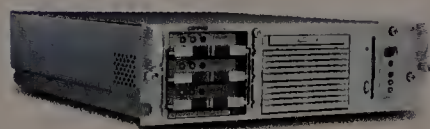
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# EXECUTIVE Briefing

News summary for senior managers

Pets-to-work policies can be purr-fect recruiting and retention tools. **IT Careers, page 68**

Florida's not a sleepy IT backwater anymore: Jobs and opportunities await in any number of industries. **IT Careers, page 71**

## In this issue

### NEWS

- 4 **Sun and Oracle join** together to design electronic-commerce software.
- 4 **Customers could pay** up to 30% more for IBM's OS/400 next year.
- 6 **Layoffs will affect** IT employees in call centers and back-office support at Citigroup.
- 8 **Microsoft will appeal** a recent preliminary ruling requiring it to comply with the terms of Sun Microsystems's Java license.
- 9 **Compaq plans to guarantee** uptime on two of its Windows NT-based servers.
- 14 **Businesses risk creating** unmanageable applications as systems grow tier by tier.
- 16 **Users will soon** have the data to determine if their carriers are meeting their service level agreements.

### OPINION

- 32 **Lenny Liebmann bucks conventional wisdom**, saying, "Don't treat your users as customers."
- 32 **Knowledge repositories can give** businesses an edge, says Don Tapscott.

### CORPORATE STRATEGIES

- 37 **Turnaround efforts** include IT projects to improve merchandising at J. C. Penney.
- 37 **Two companies embark** on AS/400-based ERP projects.

### INTERNET COMMERCE

- 41 **Web sites start to look** at real-time chat to better serve customers.
- 41 **Reaction is split** over Sun's new Java licensing model.

### ENTERPRISE NETWORK

- 47 **A parent company halts** its Exchange rollout, as one business unit makes its case to keep Notes.
- 47 **Direct mailers promise to fight spam by asking** customers to choose to receive E-mail solicitations.

### SOFTWARE

- 49 **Visa stress-tests** database prior to holiday rush.
- 49 **Solaris 7 makes** a wise upgrade for many, our reviewer finds.

### SERVERS & PCs

- 55 **Sun's JavaStation lands** a pilot customer.
- 55 **A traveling manager** connects with all his devices.

### MANAGING

- 58 **Software escrow agreements** may not be all they're supposed to be.
- 64 **Simple software doesn't** have to lack pizzazz, Jim Champy writes.

### IN DEPTH

- 65 **IT lets** business implement more flexible pricing. (For the complete text, visit *Computerworld online* at [www.computerworld.com](http://www.computerworld.com).)

### IT CAREERS

- 68 **Pets-to-work policies** purr along at some companies.

### ETC.

Company index	35
Editorial/Letters	28
How to contact CW	35
Inside Lines	88
Stock Ticker	84

### HOLIDAY WISH LISTS

**What are the lawyers** getting for Christmas? Ask Frank Hayes. **Page 12**

**Dan Gillmor** wants a conscience for Microsoft, a reality check for Internet stocks and real ease of use for users. **Page 29**

**David Moschella** seeks a better life for business travelers. **Page 29**

**IT managers** wouldn't mind Gigabit Ethernet adapter cards and cheaper international ATM service. **Page 47**

■ **Watch out** — that source code you put in escrow to protect your company against vendor woes might not be any good. A study showed that 80% of all code in escrow wasn't usable because of defects or missing pieces. Vigilance over contract terms is key, according to legal experts and companies put through the wringer. **Page 58**

■ Experienced users of enterprise resource planning rollouts warn others to know their limits before trying new versions tailored for specific industries. Many sail into rollouts unprepared and find it's hard to meet schedules because they have underestimated the complexity or are picking up new versions of the software before they're fully baked. But for one user at least, 18 months of experience with a generic version of R/3 translated into an easy install of a vertical-market version. **Page 1**

■ Sophisticated technology is letting cutting-edge companies practice "smart pricing." That means airlines can adjust fares to balance supply and demand, and insurance companies don't have to shy away from covering the worst drivers. **Page 65**

■ In a move to fight spam, the Direct Marketing Association has agreed to acknowledge opt-in marketing — where consumers must indicate that they are (rather than aren't) interested in E-mail solicitations — as the most successful method for online businesses. **Page 47**

■ Mobile project manager Will Glass-Husain constantly juggles his cellular phone, laptop and PalmPilot. Using project management software that can sync data between his laptop and his handheld helps him keep on top of things while he's on the go. **Page 55**

■ Two new Internet ventures are battling to make drugstores the next hot storefronts online. They're betting price and convenience will overcome hesitance to put medical data on the Web and the desire to talk with a pharmacist. PlanetRx and Drugstore.com plan to go live in a few months, aiming at an aging American population that has no questions about medications they take regularly. **Page 1**

■ Citigroup plans to slash 10,000 jobs, 6% of its workforce, but will trim carefully around IT staffers needed for year 2000 and electronic-commerce work. It will consolidate call centers and other back-office groups, however. It's taking a \$900 million restructuring charge, but hopes to save \$1.6 billion over two years. Meanwhile, BankAmerica launched a new group charged with turning technology into opportunities to pull in new revenue. **Page 6**

■ Don Tapscott says knowledge repositories, which let employees share knowledge and get to it quickly, give businesses a competitive edge. **Page 32**

■ A host of Web sites are experimenting with online chat, where customer service reps E-mail Web shoppers in real time. It might not save money, but customers get questions answered faster, and reps can push specials. **Page 41**

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Online this week

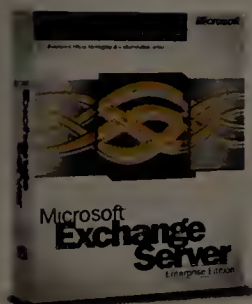
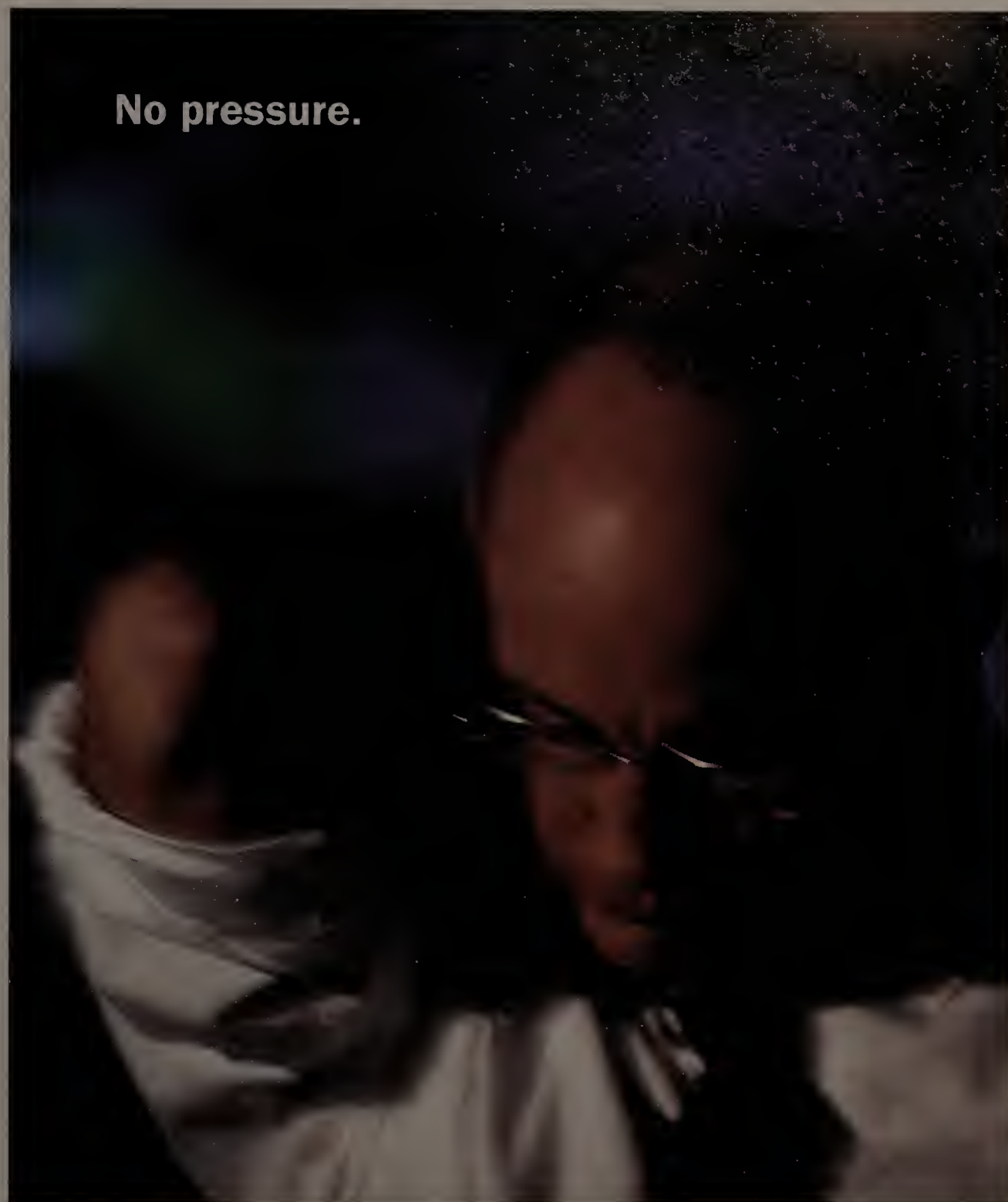
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# Sun, Oracle team up for E-commerce

## ► Database 'appliance' rivals Microsoft platform

By Stewart Deck

THE PLAN for building database appliances — first mentioned by Oracle Corp. CEO Larry Ellison at Comdex/Fall '98 last month — snapped into sharper focus last week.

Ellison and Sun Microsystems Inc. CEO Scott McNealy said their two companies will share inside technology details as they jointly design software platforms for electronic-commerce applications.

At the center of this agreement is Ellison's plan, called Raw Iron, to create a so-called database appliance. The database itself already has some operating system functions — in memory management and processing control, for example. So why not pair it with a slimmed-down operating system, that runs quietly in the background, and some hardware to

base appliance would appeal to the targeted Internet service providers because it seemed "wasteful."

"If you have a single-purpose machine that just does database operations, it'll sit there for long stretches of the day doing nothing," which doesn't seem very cost-effective, Menard said. "And most ISPs really want tools and utilities and the ability to get in and customize the operating system to fit their needs," he added.

A recent report from Zona Research Inc. in Redwood City, Calif., echoed Menard's concerns. It stated that it's unclear how much value this bundling

### Highlights of the Oracle/Sun pact include:

- A technology exchange for co-developing electronic-commerce platforms
- The Sun/Oracle platform will include Solaris 7 core services but not all the services of the full Solaris 7
- Sun will use Oracle8i as a data store in the future version of Solaris as a foundation for Solaris system services
- The new database appliance will ship in March 1999
- The agreement isn't exclusive — both Oracle and Sun can work with other partners on similar projects

and configuration deal will provide to service providers. "Most ISPs like to optimize the OS [and] tune it to their applications," the report noted.

But Daniel Gasparro, chief technologist at Booz Allen &

Hamilton Inc. in McLean, Va., said the Raw Iron concept was something he'd be willing to consider.

Gasparro said that because "Microsoft's track record for [operating system] migration hasn't

been great" he's interested in non-Microsoft alternatives. He added that Ellison's Raw Iron plan could assist with the growing problem of data stewardship — for example, who within an organization has guiding control of all those pieces of data.

Jean Bozman, a research analyst at International Data Corp., a sister company to Computerworld, said the Oracle/Sun pairing recognized two industry trends.

"They're acting on the emergence of integrated software platforms that allow users to focus on applications," she said, "and they're seeing the movement to commodity servers for Web-related services." □

A recent report from Zona Research said it's unclear how much value this bundling and configuration deal will provide to service providers.

make a dedicated database-in-a-box? Sun is offering its Solaris 7 Unix as the first operating system to fit the bill.

### MICROSOFT ALTERNATIVE

Some analysts and users said the idea sounded interesting, especially for those looking for an alternative to Microsoft Corp. platforms. Initially, these appliances would be aimed at mid-size businesses and smaller Internet service providers. But because many service providers have a limited number of information technology professionals on hand, analysts cautioned that this intended user base might not appreciate the inability to customize such a device.

By the middle of next year, Oracle hopes to pair its forthcoming Oracle 8i Internet-centered database with Solaris and other Unix-based operating systems for these appliances. But the first devices to come out — next March, the companies say — will run the older Oracle8 database.

Mark Menard, director of Internet services at Albany, N.Y.-based Atec Group Inc., said he wasn't sure the idea of a data-

## Prices to soar for IBM OS/400 upgrades

### ► Deadline passes for discounted incentive plan

By Jaikumar Vijayan

USERS WHO held off this far on upgrading to the latest version of IBM's OS/400 operating system better be prepared to fork out a lot more — up to 30% — if they plan to do so next year.

On Dec. 11, IBM pulled the plug on promotions and financing deals that could have saved some users thousands of dollars when upgrading from Version 3 releases of OS/400 to Version 4 of the operating system for IBM's popular AS/400 mid-range server.

The deals — which included a 15% discount on software, deferred payments until next year and attractive hardware trade-in deals — were introduced in May to sweeten a new pricing plan for OS/400 upgrades.

The conclusion of the promotions could make that pricing plan more onerous for users on older versions of the operating system, analysts said.

"The incentives were aimed at forcing customers to get on the plan by year's end," said Rizal J. Ahmed, editor of the "Insider Weekly," an AS/400 newsletter in Dedham, Mass.

According to Ahmed's calculations, which were confirmed by IBM, some AS/400 shops will spend up to 30% more for Version 4 operating system and related software upgrades (see chart).

Though both IBM and analysts said that reaction to the pricing strategy has been decidedly mixed so far, users already on the pricing plan said it provided a good way to budget

for OS/400 software.

"We have a fixed budgetable item, which makes planning easier and simplifies the decision to move to the next version or release," said Michael Crump, a technical project leader at Ball-Foster Glass Container Corp. in Muncie, Ind.

Under the plan announced in May, AS/400 shops must pay for a monthly, annual or multi-year subscription when upgrading to Version 4 of the operating system in order to qualify for all future OS/400 software upgrades from IBM.

Users who choose not to subscribe within 30 days of upgrading to Version 4 will get hit with a substantial "currency access fee" in order to be able to subscribe to Version 4 at a future date.

The idea is that instead of having to pay for individual versions of the operating system — as was the case in the past few years — users will now get new versions as part of their prepaid subscriptions.

And it's cheaper to subscribe than pay for each version, especially if you are upgrading your environment a lot, said Jerry Rode, director of information technology at Saab Cars USA Inc. in Norcross, Ga.

"Based on our cost analysis, we felt it was a good idea to subscribe," he said.

By signing up for a three-year subscription this year, Crump estimated that Ball-Foster saved \$44,000 compared with what he would have paid to subscribe next year.

But starting next month, users upgrading older generations of OS/400 to Version 4 will have to do so without the benefit of discounts. Such subscription plans aren't at all unusual in the industry. Users subscribe to Sun Microsystems Inc.'s Solaris operating system, for instance.

But it's still a relatively new model for long-standing AS/400 shops. "IBM drew a line in the sand and told customers what they had to do and when they had to do it if they didn't want the price [of upgrading] to go up significantly," said Al Barsa, president of Barsa Consulting LLC in Purchase, N.Y. □

**"The incentives were aimed at forcing customers to get on the plan by year's end."**

**— Rizal J. Ahmed, "Insider Weekly"**

Comparing the costs to upgrade OS/400 software from Version 3 to Version 4

	1998	1999
OS/400 upgrade	\$3,400	\$4,000
Advanced tool set for client/server	\$3,825	\$4,500
RPG compiler	\$3,060	\$3,600
Query/400	\$816	\$960
Performance tools	\$463	\$545
Subtotal of upgrade charges	\$11,564	\$13,605
Software subscription, three-year prepay	\$14,221	\$18,961
Total	\$25,785	\$32,566

Source: The AS/400 Group, Dedham, Mass.

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# Citigroup cuts to pinch IT support staff

By Thomas Hoffman

CITIGROUP INC.'s plans to cut 10,400 jobs, or 6% of its worldwide workforce, will probably affect a "significant number" of the IT employees who support its call centers and other back-office functions.

But overall, experts expect that the New York-based financial services giant will be careful about eliminating positions for information technology profes-

sionals who are needed to help complete year 2000 renovations and tie together systems that will make the firm's cross-selling vision a reality. "There is little chance that systems consolidation can occur before the year 2000," said Bill Bradway, an analyst at Meridien

Research Inc. in Newton, Mass.

One exception might be the consolidation of data centers among Citibank, Salomon Smith Barney and other Travelers Group Inc. units, according to Bradway. Travelers and Citicorp officially merged in October.

**"I would expect a significant number of IS cuts in [back-office] areas."**

**— Raphael Soifer of Brown Brothers Harriman**

Citigroup's \$900 million restructuring charge, which it announced last week, is expected to include a significant consolidation of its call centers and other back-office functions that support its consumer business.

Because of Citigroup's intent to consolidate its back-office operations, "I would expect a significant number of IS staff cuts in those areas," said Raphael Soifer, an analyst at Brown Brothers Harriman, a

New York-based investment bank. Soifer and other analysts said there's no way of estimating the percentage of IT staff positions that will bear the brunt of the layoffs.

A Citigroup spokesman said the company isn't disclosing any information beyond its press release ([www.citicorp.com](http://www.citicorp.com)).

The overhaul is expected to result in pretax expense savings of \$680 million next year and \$975 million in 2000.

Of the 10,400 positions that are being eliminated, roughly 35%, or 3,640, will be cut in the U.S. □

## Web site for buying, selling home equity loans ready to debut

By Sharon Machlis

ULTRAPRISE CORP. next month plans to announce an Internet-based marketplace for buying and selling loans, a venture backed by the \$1.6 billion financial firm City Holding Co.

The site, now in beta tests, initially will focus on a portion of the home equity loan market. "So far, we are very impressed and very happy with the system," said Milton Drageset, a vice president at City Mortgage Services, a City Holding subsidiary in Irvine, Calif.

The site provides loan analysis and attempts to match buyers and sellers based on criteria such as the borrower's credit rating and terms of the deal.

### LIQUID MARKET

There's currently a huge and liquid market for conventional home mortgages, but conditions are different for other equity loans — if, for example, the down payment is small, the amount is very large or the total exceeds the value of the house, as in a second mortgage.

In many cases, banks and

mortgage brokers try to resell such loans by phoning or faxing potential buyers.

"It's very much if I know somebody, and they have a pool of loans to sell," Drageset said.

Ultraprise began working with City Holding last year to boost efficiency within the institution.

However, Ultraprise consultants concluded that the big bottlenecks weren't in City Holding's mortgage business, but in its relationships with outside partners.

"We wound up completely changing our business model," focusing all efforts on the Web-based loan market instead of offering broader services, said David Levine ([moto@ultraprise.com](mailto:moto@ultraprise.com)), president and CEO of Ultraprise in Sheperdstown, W. Va.

Richard Beidl, senior analyst at Tower Group in Needham, Mass., said using the Web helps buyers and sellers get more information efficiently because they can compare a large number of loans in a single place without individual phone calls, faxes or E-mail messages.

"I think we will see more of these systems come online," he said.

Beidl is concerned, however, about the types of loans being touted on the site. Second mortgages that are equal or higher to a homeowner's total equity can be bad risks in an economic downturn and may be unpopular in times of recession.

Ultraprise, though, expects to expand from its initial foray into low-equity loans to other types of mortgages such as the so-called jumbo high-value

mortgage.

Pedestal Capital Inc., a New York financial firm, has been brokering loan sales on its Web site ([www.bondnetwork.com](http://www.bondnetwork.com)) for about a year.

Managing director Glenn Higgins said that between 700 and 1,000 buyers and sellers are registered users. The site recently had \$300 million

in loans for sale.

Higgins wouldn't disclose specific revenue or profit figures but said that after large start-up costs, the site is breaking even. "'99 should be a big year for us," he said.

Ultraprise initially planned to build its site in Java but switched to C++ because of slow Java performance.

While normally a Sun Microsystems Inc. fan, Levine said engineers wasted a lot of time during the project trying to get Java to work quickly enough before making the switch.

The main challenge now is

writing special software so that loans can be automatically entered into the system from a wide range of sellers.

"Everyone in this particular industry seems to have home-grown systems," Levine said.

Levine said he expects the \$2 million site to break even in two years. □

### MOREONLINE

For resources related to IT in the financial sector, visit [Computerworld online](http://Computerworld online).

[www.computerworld.com/more](http://www.computerworld.com/more)

## New BankAmerica unit to offer high-tech 'enablers'

In a bid to boost its 8% market share among electronic-commerce players, BankAmerica Corp. last week launched a Strategic Technology and Integrated Payment Services group.

The nation's largest bank, with \$595 billion in total assets, BankAmerica also has one of the U.S.'s biggest payment businesses. The Charlotte, N.C.-based bank processes 37 million checks per day and transactions for 22 million credit-card accounts and 11 million debit-card accounts.

Computerworld senior editor Thomas Hoffman caught up with the new San Francisco-based group's executive vice president, Chris Callero, 46, who started in the bank's mail room in 1971.

### CW: What's the group's charter?

CALLERO: To develop an overarching payments strategy for [many parts of our organization] that are payments [services] in nature — credit cards, debit cards, cash management.

We've already begun to extend channels to our customers — like electronic bill payment and presentment.

### CW: Why now?

CALLERO: A couple of things. Customer needs, preferences and habits are changing. Plus,



**Chris Callero: "Customers with PalmPilots will be able to access their account balances and transactions going back 90 days. That will be ready by the first half of 1999."**

there's a set of technology enablers that are available in the market, such as electronic commerce and Internet access. That's going to continue; there's no stoppage of velocity or [opportunities] in that market.

Also, how do we develop a strategy of timing and pricing of financial services to our customers? It's not our objective to be the No. 1 payment technology bank in the world. The

objective is to synchronize with the [technological] capabilities available and meet the needs of our customers in a way that's material to them.

### CW: What are some of the developments under way?

CALLERO: We're working on wireless communications with [3Com Corp.'s] PalmPilot Palm VII device. Customers with PalmPilots will be able to access their account balances and transactions going back 90 days. That will be ready by the first half of 1999, followed by account transfers and online bill payment [capabilities] in a phased approach.

### CW: How many employees will your business unit have at the start?

CALLERO: Between 50 and 100.

### CW: Have you set any financial targets?

CALLERO: Not at this point. We just started. But in terms of revenue opportunity alone, the U.S. payment industry is in excess of \$125 billion.

There's tremendous opportunity for us. □

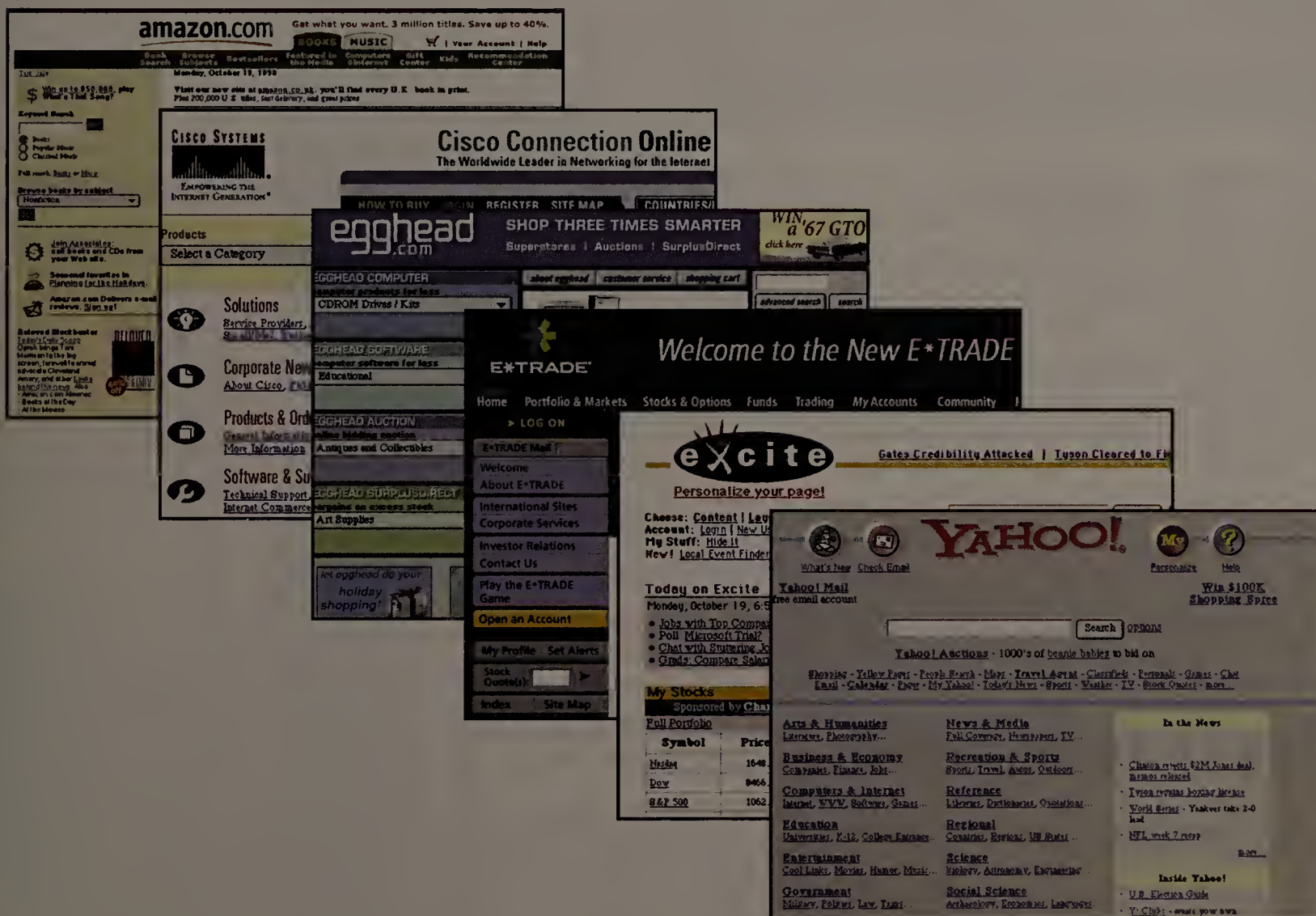
### Correction

A Dec. 14 news story ["Citing few new users, Sprint alters on-demand offering"] misstated when James Miller, vice president of information technology at Hallmark Cards Inc., said he expected to cut his network costs by half using Sprint Corp. Integrated On-Demand Network. Miller made that projection last June.



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# Microsoft gets points on the board

► Judge says AOL/Netscape merger may affect antitrust trial

By Patrick Thibodeau  
WASHINGTON

AS THE VIDEOTAPE rolled at the U.S. vs. Microsoft Corp. antitrust trial, government attorney David Boies asked Bill Gates about a notation — "Importance: High" — in an E-mail he wrote.

"Who typed in 'High,'" Boies asked. "A computer," Gates replied.

Boies persisted until Gates explained that the designation is an E-mail attribute set by the sender. "Who is the sender here, Mr. Gates?" Boies asked. "In this case, it appears I'm the sender," Gates said.

This tooth-pulling exchange had courtroom spectators laughing, but Microsoft may have had the last laugh before the court recessed last week for its holiday break.

That came when Judge Thomas Penfield Jackson said that America Online Inc.'s \$4.2 billion acquisition of Netscape Communications Corp. "might be a very significant change in the playing field" and "could very well have an immediate effect on the market."

Those comments came in response to Microsoft's discovery motion for merger documents from the companies. Without

## NOT SO ONE-SIDED

In the space of a week, Judge Thomas Penfield Jackson has made statements indicating that Microsoft may be scoring some important legal points:

**On Java:** Didn't Microsoft "grasp the significance of the work that you were doing and then run with it and produce in a relatively short time a better version . . . and they couldn't wait for you to catch up?" — Jackson to James Gosling, the creator of Java, Dec. 10

**On the AOL/Netscape merger:** The deal "could very well have some immediate effect on the market or the definition of the market as we are contemplating it here." — Jackson to attorneys on both sides, Dec. 16

making a formal ruling, Jackson asked the U.S. Department of Justice to share the merger documents with Microsoft.

### CREDIBLE CLAIM

Jackson said he was "very reluctant" to enter new documents at this point in the trial, but legal observers said the decision was nevertheless significant for Microsoft. The judge is saying that Microsoft's position — that the high-tech industry poses unique competitive challenges — is "credible and has to be looked into," said Harvey Saferstein, an antitrust lawyer at Fried, Frank, Harris & Jacobson in Los Angeles.

The judge's interest in the AOL/Netscape merger could be especially important if Microsoft

loses. If Jackson, for instance, were to consider restructuring Microsoft, he may look at the merger and require only a smaller spin-off by Microsoft, said Stephanie Goldfine, an antitrust attorney at Venable, Baetjer, Howard & Civiletti LLP in Washington.

"I think it has the potential to impact a different mix of remedies," she said.

In other rulings, the judge allowed the government to enter into evidence a stack of depositions from officials at IBM, Real Networks Inc. and Lucent Technologies Inc., among others. The government also said it would be releasing Gates' videotaped testimony.

Many antitrust attorneys say the government has put forth a

strong case — to a point.

The government should be able to win its claim that Microsoft is a monopoly, "but that by itself gets the government nowhere," said William Kovacic, a visiting professor from George Washington University Law School in Washington. To really win its case, the government must prove most of its bad conduct claims, he said.

And Judge Jackson's trial scorecard is probably mixed, Kovacic said.

The government's strongest arguments may rest with its claim that Microsoft used exclusive contracts to block competition, Kovacic said. But the outcome in other areas is less

certain. For instance, the judge may find that the infamous Netscape meeting — in which Microsoft allegedly tried to divide the browser market — may be too ambiguous, under law, for the government to win on its collusion charges, he said.

If the government wins on only one bad conduct charge, "that's a single," Kovacic said.

Where the government has clearly succeeded, legal experts said, is in attacking Microsoft's reputation.

"If anybody had any illusions about Microsoft being a nice guy, they should be disabused of it," said Yee Wah Chin, an antitrust lawyer at Squadron, Ellenoff, Plesent & Sheinfeld LLP in New York. But "the question in my mind still is whether what Microsoft has been doing is illegal." □

## MICROSOFT LAWSUITS

- ♦ **Hartford House Ltd.**, a Boulder, Colo., firm that created the Blue Mountain Arts greeting card Web site, sued Microsoft Corp. last week over a new version of Internet Explorer that it claimed could hurt Blue Mountain's business. A beta-test version of Internet Explorer 5.0 includes a spam filter that users can turn on to shunt unsolicited E-mail — such as Blue Mountain's online cards — from user in-boxes to a separate box labeled "junk mail." A Microsoft spokesman said the filter ships in the "off" position, meaning users themselves must decide to use it.
- ♦ **GoldTouch Technologies Inc.** in Irvine, Calif., sued Microsoft for fraud, theft of trade secrets and patent infringement for allegedly stealing ideas for an ergonomic mouse. Microsoft's Intellimouse Pro, GoldTouch claims, uses several GoldTouch concepts discussed during a September 1997 meeting between the two companies. GoldTouch wants at least \$1 billion. A Microsoft spokesman declined to comment on the patent claims but said Microsoft is "confident the facts will show there is no basis" for the trade-secrets claim. He declined to elaborate.
- ♦ **Mark Tornetta**, an inventor in Windermere, Fla., accused Microsoft of violating his U.S. patent for a search technology to locate real estate listings. Microsoft's HomeAdvisor Web site illegally uses that technology, Tornetta said. "We do not believe we are infringing on any valid patent claim," a Microsoft spokesman said.
- ♦ **An individual developer** who uses Microsoft's FoxPro database sued the vendor over year 2000 problems. **Ruth Kaczmarek** filed a suit in Chicago that charged some FoxPro versions don't automatically recognize the year 2000. Users instead must manually activate a feature in the products to use four-digit date fields. "We call that a minor issue, not a major issue that will stop the software or your machine," another Microsoft spokesman said. He declined to comment on the merits of the suit but said the FoxPro information has been posted on the vendor's Web site.
- ♦ Finally, Microsoft lost an appeal it filed last month to get access to research material gathered by two college professors for a book about Netscape Communications Corp. — Kim S. Nash



## Sun ruling to be appealed

► Microsoft to argue against pure Java compliance

By Kim S. Nash

MICROSOFT CORP. said last week it will appeal a recent preliminary ruling requiring it to comply with the terms of Sun Microsystems Inc.'s Java license. But some legal observers didn't give Microsoft winning odds, saying the move is merely defensive and not likely to reverse anything.

Judge Ronald Whyte at U.S. District Court in San Jose, Calif., ruled last month that Microsoft probably modified its version of the Java programming language illegally — that is, in ways not sanctioned by the Microsoft-Sun contract. As a result, Microsoft must revamp its Java products to meet Sun's specifications while the companies await next year's still-unscheduled trial, Whyte said.

Though Microsoft has begun to comply — it now offers Sun's Java Native Interface, for example — it has decided to contest Whyte's decision.

In a statement, Microsoft lawyer Tom Burt said the company doesn't think "any preliminary injunction should have been ordered."

Microsoft will outline its specific arguments when it files papers with the U.S. Court of Appeals in San Francisco, due by Jan. 14. Sun sued Microsoft 14 months ago for alleged contract breaches related to Java.

Two legal experts speculated about how Microsoft is likely to argue.

"I'd argue that we're going to win [the case at trial] and the court got it wrong with this preliminary ruling," said Terry Moritz, head of litigation at

Goldberg, Kohn, Bell, Black, Rosenbloom & Moritz Ltd. in Chicago.

"I'd also argue money damages will give Sun whatever relief [it's] entitled to, if Sun ever proves its case," Moritz said. A monetary award is easier for Microsoft to provide than a Java software rewrite, he added.

The fact that Microsoft waited a month before deciding to appeal shows that Microsoft probably believes it won't win an appeal, said Hillard Sterling, a lawyer at Gordon & Glickson PC in Chicago.

"This appeal probably will not succeed," Sterling said. That's because "all the [appeals] court needs to show to reject Microsoft's plea is that Sun likely will succeed, not that it will succeed. That low standard typically survives on appeal."

Sun has received a notice from Microsoft about the impending appeal but didn't know what Microsoft's line of reasoning would be, a Sun spokeswoman said. □



# Compaq guarantees NT server uptime

► Service suite for ProLiant aims at enterprise customers

By April Jacobs

COMPAQ COMPUTER CORP. plans to offer customers guaranteed uptime on two of its Windows NT-based ProLiant servers next month as part of a new suite of services provided by its 27,000-person services arm.

The Compaq guarantee applies to any of its ProLiant 3000 and ProLiant 6500 servers running NT 4.0. Pricing varies widely based on the number of servers and the environment in which they are running. Users can choose between 99.5% and 99.99% uptime plans.

## Compaq's new service suite includes:

- Windows NT system and cluster start-up and installation services
- Availability review for complete environments
- Disaster recovery for a client's assets

For users, the offering may be attractive because it involves a guarantee of availability on NT servers — a direction many companies are taking not only for file and print applications, but also for more business-critical applications.

"We would definitely be interested in this because our plan is to implement NT," said Lou Iozzi, a consultant at Wyeth-Ayerst Laboratories Inc., a pharmaceuticals company in St. Davids, Pa.

"Vendors in the server industry are realizing the importance of uptime and are

coming up with ways to avoid problems," he said, noting that enhancements such as mirroring and hot-swappable drives have made it easier to deal with downtime.

"We can't afford to have any of our servers down for more than four hours, because we can't do business when they are," said John Cummings, lead technical analyst at Continental Grain Co. in New York.

"So, like everyone else, we'd be interested in this kind of offering, particularly in our regional offices where IT staff support is limited," he said.

Compaq has been promising to increase its services offerings since it acquired Digital Equipment Corp. and Tandem Computers Inc. early this year. Analysts and users said the announcement is important given the growing role of NT servers in business and is crit-

ical to Compaq proving itself in the enterprise space already occupied by IBM and Hewlett-Packard Co.

Analysts said market leader Compaq was under pressure to come up with

more service offerings after HP offered a guaranteed uptime program for some of its Intel-based servers last month.

"It legitimizes Compaq from a hardware and design [standpoint]," said John Dunkle, an analyst at Workgroup Strategic Services Inc. in Portsmouth, N.H. As

Compaq makes a bid to be recognized in the enterprise server market, it must prove it can offer consistent and complete services to accompany its hardware offerings, he said.

Compaq's guarantee of uptime covers the hardware and operating system, but not any software. HP's guarantee of 99.9% uptime also varies widely in price. HP certifies the systems' configurations before placing the guarantee. □

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# IBM tries one-stop shopping for PCs, service

By Stewart Deck

IBM HAS CONFIRMED that it's working on a plan to link its Personal Systems desktop division more closely with the company's global services group. The effort has been referred to within the Armonk,

N.Y., company as "Blue on Blue" — for example, selling Big Blue services on Big Blue hardware.

That approach would give users a single bundle of machines, software, support and services, instead of making them shop in a different IBM store with

a different IBM clerk for each piece they need.

"Instead of selling hardware, software, services and management capabilities piecemeal, our goal is to be a one-stop shop," said Steve Walsh, program manager at IBM's Personal Systems group.

The added plus would be that one-stop shopping would give customers a single place to turn should any trouble crop up.

Aimed at enterprise sales, the combination selling would offer IBM users individual price discounts based on the mix of hardware and length of service contracts, Walsh said.

As part of the division integration effort, IBM has begun to outfit many of its PCs with its own Tivoli systems management software. That would allow its sales teams to tout the built-in remote-management capabilities of the systems.

Next year, the company also will flesh out a new methodology it calls "X Architecture," which is being designed to help users reduce their information technology expenses by bringing more high-end server capabilities into more low-cost machines, Walsh said.

IBM is attempting to find a way to turn around a flagging PC division, said Rob Enderle, an analyst at Giga Information Group in Santa Clara, Calif. "The mobile portion [of the division] is doing reasonably well, but the Personal Systems group hasn't been performing up to expectations, so [IBM is] allowing it to become more aggressive," he said.

## OVERKILL

But if the intra-IBM effort is also intended to make it easier to buy software or sell services, it strikes at least two users as overspent effort.

"A lot of vendors are trying this bundling approach, and so far, it isn't particularly groundbreaking or appealing to us," said James Walley, vice president of IT at the Comedy Central cable network in New York.

Walley, who recently outfitted the company's sales force with IBM ThinkPads, said, "It hasn't been particularly hard to buy any IBM stuff in the past."

Kevin McCarron, global project manager at The Dow Chemical Co. in Midland, Mich., said the additional services and other add-ons "would be interesting but wouldn't be primary in our thinking" when choosing products. Dow has recently signed a global contract for workstations with IBM, McCarron divulged.

But McCarron also noted that international product consistency and global service were more important to the sale than any IBM cross-divisional packages.

Joe Greulich, MIS director at Akron, Ohio-based Roberts Express Inc., said IBM is one company he would trust for this kind of full-court offering. "It probably wouldn't be a good fit for a small firm, but I definitely see advantages in this for big global companies with lots of remote users." □

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## FRANKLY SPEAKING

## 'Twas the night before . . .

FRANK HAYES

**S**ANTA WASN'T feeling any too jolly. Deadlines were closing in, and he still had to finish up that long gift list for the IT industry.

"Why did we stop giving out lumps of coal?" he grumbled.

"OK, who's next?"

"Bill Gates," the elf said, fingers poised above the keyboard.

"One of those self-help legal books, maybe?" Santa suggested hopefully.

"Gave him that last year. It didn't take," the elf said. "What about a book on making better videos?"

"Too late for that," Santa said gloomily. "And I'd give him a Furby, but at this point, he's the only man on the planet who can afford one. Let's go on and come back to him."

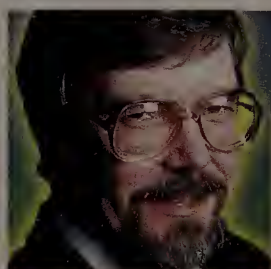
The elf shrugged. "Steve Jobs."

"How about some gag business cards that give his title as 'interim president

for life?' Or maybe a T-shirt that says 'King of the Permatemps,'" Santa said. "Next?"

"Scott McNealy," the elf said. "Give him another espresso machine."

"Fine," said Santa, looking over the elf's shoulder. "Jim Barksdale? Give him a few hundred free hours on AOL — we've gotta get rid of those CDs somehow. And



**"And give Procter & Gamble a box of soap. They still haven't come clean on Y2K."**

give Larry Ellison a WebTV if he's so hot on network computers. Who's Hasso Plattner?"

"Head honcho at SAP," the elf said.

"He's the cr-r-razy German who threw a beach party on Wall Street and was

dancing in a hooray-for-Hollywood kickline at his trade show."

"Send him a book on American pop culture," Santa said. "And another one on how to make user-friendly software. Aren't we down to the users yet?"

"IRS Commissioner Charles Rossotti," said the elf, paging down a screen.

"He wants to spend \$8 billion and 15 years overhauling the IRS's IT systems," Santa said. "Give him a treadmill — that's what he'll be on for the rest of his life."

"What about FedEx?" the elf asked.

"Their pilots almost went on strike when the company rolled out a new scheduling application without, um, piloting it first."

"A copy of Flight Simulator," Santa said. "And give Procter & Gamble a big box of soft soap. They still haven't come clean to investors on how the year 2000 will hit their systems, and they'll have to explain

that to the Securities and Exchange Commission soon, too.

"But make sure there's something nice in the stockings of those IT managers at Dow Corning and Bruno Magli USA and all the other companies that

went the extra mile to help their staffs survive the final stages of rolling out enterprise software," he said. "And the same for those companies that are straight with their suppliers and customers about their year 2000 problems. Give 'em whatever they want — they deserve it."

Now Santa was on a roll. "For Ed Yardeni — that economist who thinks Y2K will bring on a worldwide recession — decaf. And lots of strong green tea for all those Asian bankers and politicians who are proving you can have a worldwide recession even without Y2K. And Jolt Cola for all the Y2K laggards who still haven't woke up yet. Who's left?"

"Still got Mr. Gates," the elf said.

"Oh, give 'im another lawsuit," Santa grumbled. "Heck, give him two or three, he seems to like 'em so much." He stood up. "That's it. Let's start loading the sleigh."

"But wait," the elf said. "We still have all the lawyers. What'll we give them?"

At last a twinkle returned to Santa's eye. "Ho ho ho!" laughed the jolly old man. "We've already given them Bill Gates — what more could they want?" □

*Hayes is Computerworld's staff columnist. His Internet address is frank\_hayes@cw.com.*

## SHORTS

**IBM unveils network chip**

IBM has unveiled a chip that can manage thousands of "virtual network connections" used at major electronic-commerce sites. The chip was designed for use in networking equipment such as routers, hubs and switches. IBM said its engineers combined functions typically handled by several different devices into a single integrated circuit. The Asynchronous Transfer Mode resource-management chip can partition bandwidth for more than 65,000 simultaneous network connections.

**Intel, S3 sign graphics pact**

Intel Corp. has signed a 10-year cross-licensing agreement with graphics chip maker S3 Inc. in Santa Clara, Calif., that allows Intel to use S3 technology in future graphics chip products. The deal furthers Intel's efforts to become more of a player in the graphics chip arena.

**Software maker indicted**

A Santa Clara County, Calif., grand jury last week indicted semiconductor design software maker Avant Corp. on charges it stole code from rival Cadence Design Systems Inc. The indictment also charges eight Avant employees, including chairman and CEO Gerald C. Hsu. Avant denied the charges.

**Impeachable E-mail offense?**

The U.S. House of Representatives experienced a slowdown in E-mail delivery as its members were preparing to vote on the impeachment of President Clinton. Two of the House's 14 Microsoft Exchange 4.0 mail servers were flooded with more than 1 million messages on Tuesday, up from a daily average of 80,000. Once the server software's 16G-byte limit was broken,

messages on the two servers were thrown into a loop, which slowed down the network. Microsoft Corp. was called in to fix the programming bug.

**Novell makes \$9M investment**

Novell Inc. said it has spent \$9 million worth of minority equity investments in five networking software companies: EnCommerce Inc. in Santa Clara, Calif.; NetObjects Inc. in Redwood City, Calif.; ObjectSpace Inc. in Dallas; Oblix Inc. in Mountain View Calif.; and Orbital Technologies Inc. in Palo Alto, Calif.

**Keyboard injuries decline**

For the third year in a row, repeated-trauma cases — including keyboard- and mouse-related injuries common among office and IT workers — have decreased slightly, according to the U.S. Bureau of Labor Statistics. Last year, repeated-trauma cases declined by 2% from 1996 and by 11% from 1995 to 276,000 cases across all industries. The report attributed the decline to efforts by businesses to correct ergonomic flaws in their workplaces.

**Voice-over-IP alliance forms**

Six companies last week joined INow, an industry group devoted to making devices work together that enable voice over the Internet Protocol. The newcomers, Ascend Corp., Cisco Systems Inc., Clarent Corp., Dialogic Corp., National Microsystems Inc. and Siemens AG, joined INow (Interoperability Now) founders VocalTec Communications Ltd., Lucent Technologies Inc. and ITXC Corp. The companies plan to support an agreement, to be published next month, that allows gateways and gatekeepers used for IP telephony to work together.

**Staples spins off E-commerce**

Staples Inc. said it's spinning off its electronic-commerce operations into a separate business unit. The Westboro, Mass.-based office supply company launched its Web shopping site last month. Company officials said they will invest an additional \$10 million in the unit next year.

**Software industry groups merge**


Two software industry trade groups — the Information Industry Association and the Software Publishers Association — have agreed to merge. Starting Jan. 1, the new Software & Information Industry Association will operate from SPA's current Washington headquarters.


**SHORT TAKES** Microsoft is ready to ship the initial test version of the third beta version of Windows 2000, dubbed Candidate 0, the company said last week. A generally available Beta 3 Version of the product, formerly called Windows NT 5.0, is due in March. . . . **EDS** in Plano, Texas, announced plans last week to sell 2,000 automated teller machines to **American Express Co.** EDS will continue to operate the machines. . . . **Oracle Corp.** this week plans to announce a temporary 50% discount on its sales, marketing and customer service applications for users who switch from software developed by **Scopus Technology Inc.** . . . Microsoft today plans to deliver the public beta of its Internet Explorer 5.0 browser for HP-UX. . . . **Sprint Corp.** said it will build Digital Subscriber Line connections to homes and businesses in 35 cities rather than work with local carriers. . . . A 25-year-old Texas man who this month broke into **Microsoft** headquarters in Redmond, Wash., last week was charged with burglary and damaging \$3,900 worth of electronics equipment, The Associated Press reported.





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# Easing the 'middle-tier' traffic jam

## ► Securities firm leads with agent technology

By Carol Sliwa

THE WEB MAY BE driving scores of companies to take a three-tier approach to developing applications. But for Daiwa Securities America Inc., that just wasn't cutting it.

The New York-based financial services firm is pushing itself to

a leading-edge approach to tackle the problem of passing data among multiple systems.

Daiwa is using Java-based agents in a more flexible "n-tier," or multitier model, to actively perform functions such as data entry, trade validation and routing.

"It's an outgrowth of three-

tier," said Jeffery Borrer, Daiwa America's director of information technology. "Lots of Wall Street people have realized that three-tier isn't sufficient."

Though the financial firm's move to agents doesn't signal a definite trend just yet, other companies are wrestling with ways to make the three-tier client, application server, database model more flexible.

A move to agent technology could enable applications to be changed and maintained more easily, for one thing. Agent technology holds out the promise of automating more functionality in any layer of an application and linking to multiple data sources and applications.

Yet for many companies, the middle tier — which can run on separate boxes or a mainframe cordoned off with a "logical" middle layer — is helping them gain that flexibility.

### EXPANDING MIDDLE

The middle tier can include Web servers, application servers, business objects and other communication code. It helps with anything from transmitting and processing requests to caching data and balancing the server load.

"This middle tier is getting massive, and the risk that you'll create something that's completely unmanageable and too complex to change... is quite high," said John Rymer, an analyst at Upstream Consulting Inc. in Emeryville, Calif. Some

companies, such as The Home Depot Inc., have turned to Common Object Request Broker Architecture (CORBA) for multi-tier, distributed applications.

Home Depot needed to write applications that could run across multiple platforms and interoperate with applications written in other languages. Daiwa, however, found CORBA too complicated. Instead, it opted for agents, or JavaBeans components, that have application rules plugged in to them.

The agents can run anywhere — even in different physical locations. They talk to one another and pass objects back and forth through an event-based messaging system from Active Software Inc. in Santa Clara, Calif. The agents differ from CORBA objects in that they're active — they're capable of performing a function — rather than being passive, or performing only when asked to do something.

"It's an extremely flexible architecture," Borrer said. "We can add a new agent for a credit check and insert it into the architecture and nothing else changes. You can make changes easily, and you can also insert agents and new functionality into the system." □

# SGI hitches comeback to Win NT bandwagon

By Jaikumar Vijayan

SILICON GRAPHICS INC.'s launch of its first Windows NT workstations next month is going to be a critically important move for the company.

The once high-flying vendor of Unix workstations and servers has been struggling during the past two years with a host of problems. They have included manufacturing delays, missed product cycles and bruising competition from low-cost Wintel boxes that finally pushed SGI late last year to announce plans for its own Windows NT workstation.

SGI's new Windows NT systems — scheduled to be launched on Jan. 11 — are expected to pack many of the same system features and graphics capabilities found on the company's O2 line of low-end Unix workstations, said Greg Weiss, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. For instance, the new systems are expected to be based on a performance-enhancing high-bandwidth SGI design, called Unified Memory Architecture, that speeds communication between different subsystems and system memory in a workstation.

Unlike other workstations, which typically feature separate graphics subsystems, SGI's NT

systems will feature graphics capabilities that are integrated right into the motherboard — making for faster graphics, Weiss said.

Pricing for entry-level systems is expected to start at around \$4,000 for a single-processor system based on Intel Corp.'s Xeon Pentium II chip. The systems will be able to support up to four processors at the high end.

"SGI's added value in the marketplace is its graphics capabilities and the scalability of its systems."

... If they can deliver it to the commodity market," the company could make an impression in the Windows NT space, Weiss said.

SGI's new Windows NT systems could stop the slide

at SGI and raise the graphics performance bar in the Wintel space, agreed Gary Davis, president of Animation House Inc., an animation studio in Evanston, Ill. A former user of SGI systems, the company recently pulled the plug on its SGI Unix systems, mainly because they were too costly and proprietary to maintain. But the new NT systems could have Animation House looking at SGI again, Davis said.

"If they can be cost-competitive and can take their excellent graphics technology and make it NT-friendly — they have a

### Features of SGI's Windows NT workstations:

- Support for dual Intel Xeon chips.
- Based on SGI's performance-boosting Uniform Memory Architecture
- Graphics subsystem integrated into the motherboard
- Pricing starts around \$4,000

# Linux gaining backup tool support

By Nancy Dillon

LEGATO SYSTEMS INC. will soon join Spectra Logic Corp. on the scant but growing list of backup vendors offering Linux support.

The Palo Alto, Calif., company plans to announce Linux server support in "the next 90 days," a Legato official said last week. That confirmation came directly on the heels of Spectra Logic's announcement that Alexandria Backup adds Linux support in Version 4.5, which is now shipping.

Linux is an open-source version of Unix that's said to be gaining ground in corporate information technology thanks to its free licensing, lean source code and compatibility with modern as well as legacy hardware. But possible drawbacks include the fact that nobody really owns Linux, so upgrades and support are therefore less dependable.

"I think a lot of organizations are evaluating use of Linux right now... but [Linux's] backup utilities aren't sufficient," said Dave Hill, an analyst at

Aberdeen Group Inc. in Boston. He said most enterprise users are already used to the automation and reporting tools found in multiplatform backup packages and that these users are looking for such functionality with Linux.

Hill said he expects other vendors to follow Spectra Logic in supporting Linux.



"It's nice that Linux is being seen as a viable platform."  
— Andy Martin, Garden Escape

Andy Martin said he's happy about the announcement because "it's nice that Linux is being seen by more software companies as a viable platform." Martin is chief technology officer at Garden Escape Inc. in Austin, Texas. He said that although his company's online gardening store runs on Sun Microsystems Inc.'s Solaris platform today, he prefers freeware and is impressed with the reliability of Linux.

"Once Solaris screws up for us, we'll move to [Linux]," he said. He later added that "it would be nice if there was backup software waiting for us."

### RELIEF IN SIGHT

One user with Linux already in place said the announcement signals much-needed relief. "At the moment, I have to run backups of my Linux [mail] server separate from my network backups," said Shawn Button, information systems manager at architecture firm Downing, Thorpe & James in Boulder, Colo. "If we could

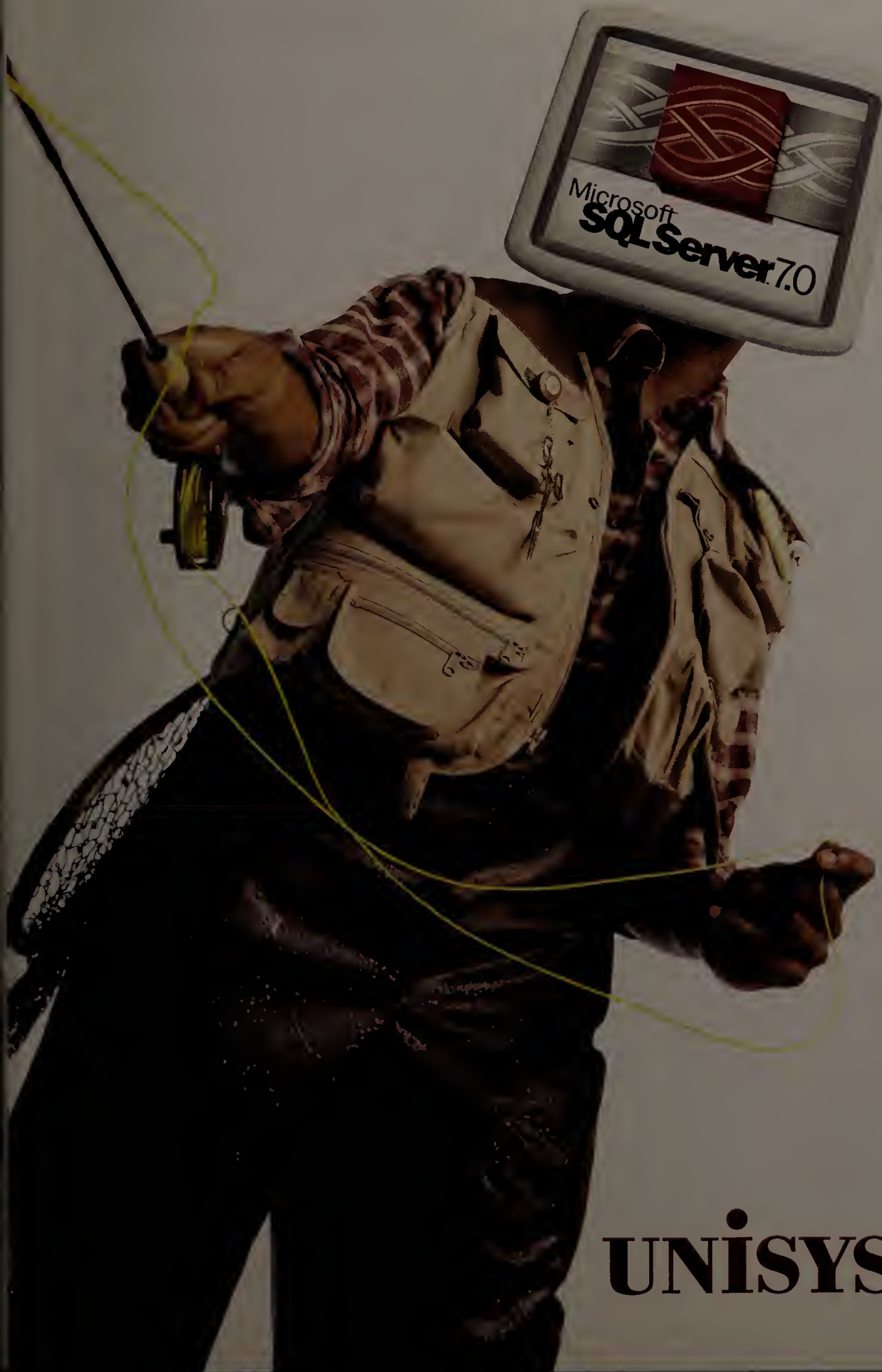
add the Linux server to our [network backup], it would get a nightly backup without any manual work."

Meanwhile, officials at Veritas Software Corp. in Mountain View, Calif., said they too plan to announce Linux backup support by the middle of next year. And a lesser-known company called Knox Software USA in Burlingame, Calif., has been offering Linux backup via its Arkeia product since last year. □



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# Cisco and Concord promise carrier info

By Bob Wallace

CISCO SYSTEMS INC. and performance package vendor Concord Communications Inc. last week joined forces to provide users with the data needed to determine if their carriers are meeting their service-level agreements (SLA).

The two eventually plan to provide information technology managers with performance data on end-to-end links between a company's sites but are beginning with a more modest goal: to provide information only on performance across a carrier's backbone network.

Concord in February will ship a module dubbed Network Health Cisco WAN Manager that will put that information in displays and reports for IT managers.

"This is a logical first step for Concord, which wants to make sure its performance reports cover carrier networks," said Patrick Dryden, an analyst at Giga Information Group, a Cambridge, Mass., consultancy. The module's reports will let IT managers determine if backbone network SLAs are being met, he said.

A wide-area network SLA is an agreement between a carrier and a customer in which the carrier agrees to maintain a preset performance metric on all or part of a link. Carriers offer credits or refunds if they don't meet SLAs.

## HOW IT WORKS

In the Cisco/Concord partnership, Cisco WAN Manager — the vendor's network and element management package for its WAN switches — will poll a database in the carrier's network for data such as packet loss and link use.

Rather than doing its own polling, the new Concord module will extract the data from the Cisco package.

Cisco and Concord plan to offer users data covering end-to-end links in the middle of next year. That will be done by using data collected from Cisco's Response Time Reporter, which is an agent embedded in the vendor's Internetworking Operating System device software.

Users need to use carriers whose networks are based on Cisco switches and have Con-

cord's Network Health package and Cisco WAN Manager to take advantage of that partnership. Once the two vendors extend their efforts to offer end-to-end link coverage, they will be able to provide data only for Cisco routers at user sites.

Dryden said he expects other network performance package and service vendors to team with Cisco to offer similar reporting modules. The Cisco/Concord agreement isn't exclusive, but it's unclear how well Cisco is able to team with others.

"We expect quite a lot of interest, [but] we're constrained on resources [that] may limit us from working with other vendors," said Sanjiv Desai, a Cisco product manager.

Network Health Cisco WAN Manager will cost \$15,000. □

# Drugstores

CONTINUED FROM PAGE 1

The challenge lies in persuading consumers to put potentially sensitive medical data on the Internet and give up face-to-face meetings with pharmacists, said Derek Leckow, an analyst at Barrington Research Associates Inc. in Chicago.

"Customers want to go where they get the highest level of service," he said. "The pharmacist has become an important health consultant for many people."

Few people comparison-shop for prescription medicines, so the market isn't particularly price-sensitive.

Who are the likeliest early adopters? People with chronic illnesses who must refill prescriptions regularly — and thus don't have any more questions about their medications, Werbach predicted.

Both PlanetRx and Drugstore.com will probably go live on the Web within months. Drugstore.com declined to com-

ment on its plans, but industry watchers expect its site to launch next month. PlanetRx officials said they will go live early next quarter.

Each has attracted some experienced management talent. PlanetRx is headed by Bill Razzouk, a former top executive at Federal Express Corp. and president of America Online Inc. Drugstore.com, based in Red-

mond, Wash., is led by former Microsoft Corp. vice president Peter Neupert, who helped launch MSNBC and the online magazine *Slate*.

Demographics are making this market increasingly attractive. Still, with pharmacy retailing expected to boom in the next decade as the U.S. population ages, Leckow said "that translates into opportunities for other niche players." There already are small sites that offer



Customers can order prescription refills online from Walgreens, but they still have to enter the store to pick them up

prescriptions on the Web.

Online shoppers will spend only about \$8 million this year at health and beauty products sites, according to Jupiter Communications Inc. in New York. However, that's expected to grow to \$65.5 million next year as new sites come online.

A number of large companies offer prescriptions by mail, including Merck-Medco Managed Care LLC in Montvale, N.J., a subsidiary of pharmaceutical giant Merck & Co. Merck-Medco began allowing prescription refill requests on its Web site in March. Although the company won't release specific figures, a spokeswoman said site use has been growing about 46% per month since July.

Walgreen Co. in Deerfield, Ill., one of the nation's largest retail drugstore chains, has been offering prescription refill requests on the Internet since January. However, the refills still must be picked up at the local store — which helps to drive foot traffic and encourage other purchases.

Ordering refills online has been "a little more popular than we thought it would be" and continues to grow, a Walgreen spokesman said. But it remains a "very tiny percent" of its overall prescription business, he said. The company also doesn't disclose figures about its site, but Leckow estimated that 40% to 50% of Walgreen's annual \$15 billion sales come from medications.

While Internet ventures are unlikely to make a dent in overall brick-and-mortar drugstore revenue for the foreseeable future, Werbach said the industry nevertheless should pay notice. "If the Web cherry picks off the more lucrative customer, you're in trouble even if you're not necessarily losing a majority of your business," he said. □

# Cabletron software boosts net backbone

By Bob Wallace

WHAT WOULD YOU say to vendors that claim they can break bandwidth bottlenecks in backbone networks for free without having to junk any expensive switches?

Users have been saying "show me," so vendors have delivered switches with special software that combines several smaller pipes into a much bigger one.

That trend picked up speed last week when Cabletron Systems Inc. in Rochester, N.H., joined the fray and announced SmartTrunk, which lets its switches do just that. Options include combining 100M bit/sec. Fast Ethernet or Gigabit Ethernet pipes.

Other major switch vendors that support that functionality include Cisco Systems Inc., 3Com Corp. and the Nortel Networks division of Nortel Inc.

"Rather than buy a Gigabit Ethernet switch, you can combine multiple 100M bit trunks to create a bigger pipe that you can get by with," said Esmeralda Silva, an analyst at International Data Corp., a sister company to *Computerworld* in Framingham, Mass. "You get more bandwidth and better performance. And it lets you make do

with what you already have."

Realizing that many cost-conscious users are averse to backbone network upgrades, switch vendors have developed software that lets them combine existing pipes. That protects their often-heavy switch investments.

Clarkson University in Potsdam, N.Y., uses Cisco's feature, Fast EtherChannel, to boost performance between desktop and backbone switches in two of its schools. Having 100M bit/sec. pipes wasn't enough, so the school used the feature to create 800M bit/sec. pipes to handle its heavy data traffic.

"This approach has done the job very well for us, and none of the links warrants a Gigabit [connection], as utilization only ranges from 25% to 35%," said Charles Cameron, manager of systems and networks at Clarkson. "I doubt some areas will ever outgrow it." Some areas eventually will need Gigabit Ethernet, but Fast EtherChannel will be sufficient in those cases until Gigabit Ethernet switch prices come down, he added.

The Genome Sequencing Center at Washington University in St. Louis was in a similar predicament and decided to use the feature among four switches to handle increasing traffic.

"We have about 150 people

moving 40M-byte DNA sequencing files across the network, which can bottle things up," said Kelly Carpenter, systems manager at the center. Going with bigger pipes has helped the situation, he said.

Without the ability to build the big virtual pipes between its backbone switches, the center didn't have to upgrade to an expensive Asynchronous Transfer Mode-based backbone network, Carpenter said.

"We found we could stick with Ethernet technology and still get more bandwidth. It's super-cool that we didn't have to overhaul our backbone network," he said. □

## Biggest benefits of pipe aggregation switch software

- ▶ Can break bandwidth bottlenecks in backbone networks
- ▶ Can be invoked using built-in or downloaded switch code
- ▶ Software feature or add-on is usually free
- ▶ Doesn't require switch replacements
- ▶ Doesn't require backbone network upgrades



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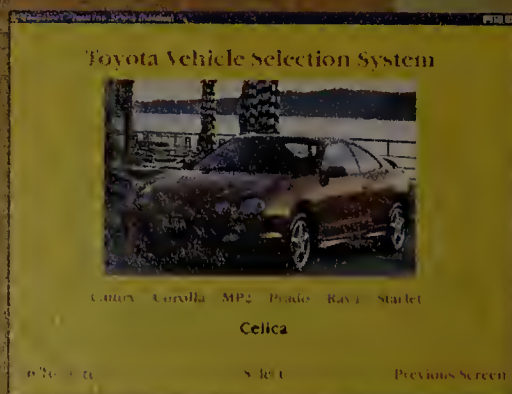


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# Introducing Jasmine

Objects @ Work



# Utilities give 'Peace' a chance

► Kiwi firm has system for deregulated market

By Julia King

NEW ZEALAND'S Peace Software is making inroads in the rapidly deregulating U.S. utilities market. In the past 12 months, the vendor has signed up three North American users for its browser-based Energy customer information system (CIS).

In 1989, New Zealand became the first country to deregulate its utilities markets, giving Peace a potential jump on U.S. companies only now facing deregulation.

Company President Brian Peace said the software's key differentiator is that it was specifically developed for gas and electric utilities operating in a deregulated market. As such, it can accommodate multiple pricing structures and various kinds of interactions with customers. The system also is browser-based, which means energy usage and billing data is available to customers online anytime.

By contrast, analysts said most vendors of utility software packages used by regulated companies are only now revamping their products to contain these features.

Peace officials assert that their software is at

least 50% cheaper to implement than other packaged applications, including SAP AG's R/3 version for utility customers. The cost of an Energy license is about \$4 per customer, depending on the number of customers the system serves. A utility with 1 million customers can expect to pay about \$3.5 million for the software, Brian Peace said.

Cost and the software's browser technology were both critical decision factors for Insite Services LP, a New York-based utility billing service that uses the Energy CIS to process about 75,000 transactions monthly for a total of \$1 billion in bills per year.

"As a service bureau, we have to distribute information to a lot of different people up and down the food chain, including our clients, their call centers and in some cases to the outsourcers that provide their call center support. Using a browser is the lowest-cost way to do that," said Insite's president, Jonathon Shaevitz.

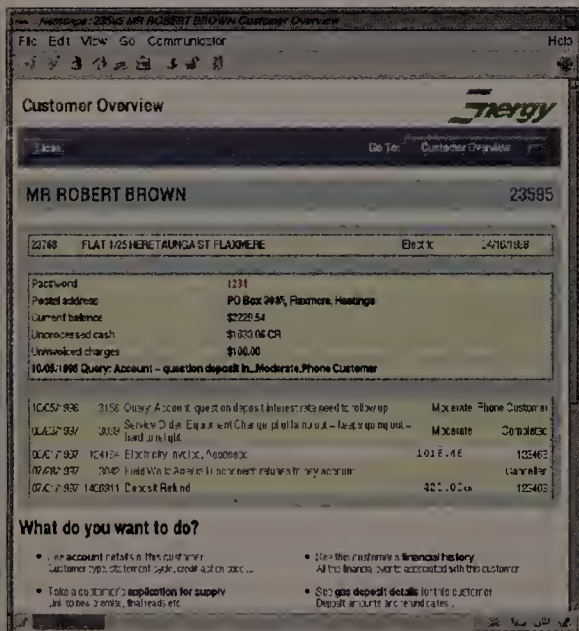
Other users include Enron California, a division of Houston-based Enron Corp., which serves municipal gas and electricity customers in South San Francisco and Palm Springs, Calif., and British Columbia Gas Co., which has 750,000 customers and is based in Vancouver, Canada.

Lower software purchase and implementation costs are critical in the U.S. utilities market, said Guerry Waters, a utilities analyst at Stamford, Conn.-based Meta Group Inc.

"It's not necessarily functionality but the need to lower the cost of a billing infrastructure" that's driving utilities' software choices, Waters said. "Traditionally, deep-pocket utilities have been implementing [custom] customer information systems, but now, with competition, they have to lower back-office costs."

For now, Waters said Peace Software appears to have the deregulated market to itself. Still, virtually all other utility software vendors are revamping their products for the deregulated market.

"So I think Peace will enjoy only a short honeymoon," Waters said. □



Peace Software's browser-based, customer information system makes billing data available online anytime

## Firm helps users test E-commerce

By Julia King

INVENTA CORP. is looking to quicken the pace of Internet time with its new RapidWeb service, under which it will design and build a new electronic-commerce system in just six weeks.

"Users want to get their feet wet, plus demonstrate the concept to others in their organization, and this gives them a way to do that," said Tan Moorthy, director of operations at the Santa Clara, Calif.-based systems integrator.

For \$250,000, Inventa will complete a Web application for one of the following activities: online sales, one-to-one marketing, configuring a customized online order or online customer service and product support.

The company's first customer, Fujitsu PC Corp. in Milpitas, Calif., tapped RapidWeb

to create a service to sell refurbished computer parts online.

After real-world tests of pilot applications, customers can decide whether to build full-fledged electronic-commerce sites with links to back-end systems for financial data and inventory, Moorthy said.

Stan Lepeak, an analyst at Meta Group Inc. in Stamford, Conn., endorsed the use of pilot tests for online commerce.

### TESTING THE WATERS

"A lot of people were burned by their initial foray into the Web. They dropped a couple of million into Web sites that literally did nothing for them," Lepeak said. "Companies would feel a lot more comfortable with something like this, that lets them test the waters."

But Craig Winn, CEO of Value America Inc., a Web retailer in Charlottesville, Va., vehemently disagreed.

"It's an absolute waste of time and energy" to dabble in pilot applications, Winn said. "E-commerce is all about money. It takes tens of millions to promote a site. The idea of sticking your toe in the water is absolute craziness." □

## Lessons learned the hard way

► Customer service requires integrated systems

By Roberta Fusaro  
and Barb Cole-Gomolski

CUSTOMER SERVICE today means fielding phone calls, E-mail and Web site queries. But immature technologies, stovepipe systems and separate staffs can prevent some companies from providing good customer care, users and analysts said.

A recent snafu at BankBoston Corp. illustrates what can go wrong when companies haven't integrated their customer-service systems and staffs.

When Forrester Research Inc. in September tested BankBoston's ability to respond to E-mail queries, it clocked the financial giant at three hours. But when the research firm tested the bank's E-mail response more recently, it took a month to get an answer.

And in an October report, Concord, Mass.-based Gomez Advisors Inc. rated BankBoston near the bottom in customer service among Internet bankers.

Forrester attributed the lag time to the bank's recent promotion of its new HomeLink online banking service, which produced a flurry of consumer E-mail. But the lag also occurred because a phone representative couldn't access the earlier E-mail queries from his workstation.

"This demonstrates what we know already and is true of a lot of companies: There is a disconnect between their E-mail and call-in channels," said James Punishell, an analyst at Forrester in Cambridge, Mass. "If I send an E-mail, the guy who is picking up the phone should have access to that."

A BankBoston spokesperson said customers who call on the phone do have the option of dealing with an online services agent. He suggested that per-

### NET SAVINGS

Typical service call by phone costs a company \$2 to \$5

Typical service call via the Web costs a company 25 cents to 50 cents

Source: Alltel Corp. presentation at the ICCM '98 conference

haps Forrester didn't select the right prompt.

Many companies are folding an E-mail group into their call centers that answers Web queries. There's some overlap between the tasks, but "no one is integrating the two very well," said Donna Fluss, a research manager at Gartner Group Inc. in Stamford, Conn.

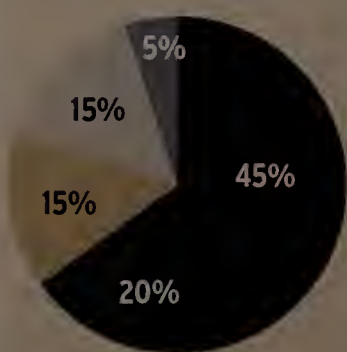
San Francisco-based Charles Schwab & Co. said it's trying. The financial institution has thousands of customer-service representatives collecting customer inquiries from bank branches, the Internet and call centers worldwide.

"Integrating all that information has been a big issue for us," said Mary Kelley, vice president of databases and marketing at Schwab. "The vendors all talk about customer relationship management, but really they're just talking about relationship management for a particular touchpoint. For those of us who are multichannel, that's not good enough."

Doug Holden, a consultant at KPMG Consulting in Mountain View, Calif., said that until the

### Why customers leave

Customers leave a store or business because they don't get what they want. But it has less to do with price than attention given:



- Poor service
- Lack of attention
- Can find a cheaper product elsewhere
- Can find a better product elsewhere
- Other/unspecified reasons

Based on customer interviews and other research

Source: Presentation at CTI Exco, Baltimore, May 1998



# Brio warehousing eases Y2K stress

By Stewart Deck

WITH MANY information technology staffs not just short-handed but working more and more feverishly on year 2000 troubles, one of the last things they want to do is put everything down and spend hours running voluminous database queries. Yet their end users still need that data.

Last week, Brio Technology Inc. in Palo Alto, Calif., introduced a data warehousing program designed to help users

technology matures, companies will need to rely on customized data warehouses that collect all customer data and inquiries.

For example, Atlanta-based Coca-Cola Co. has a 105-person consumer affairs group that handles letters, E-mail and phone queries, said Kari Bjorhus, marketing manager at the soft-drink maker. All the consumer questions coming from each channel are handled by staff dedicated to that channel but are entered into one database.

Nashville-based First American National Bank, which has offered customer service via E-mail for more than a year, integrated the E-mail with its call center. It requires that "you redefine what a call is," said Jay Elshaug, service-level manager. With an integrated system, a "call" may be a phone call, a fax, an E-mail or a visit, he said.

But the threat of not doing well at handling multiple customer-service channels has held back some companies.

For example, Goodyear Tire & Rubber Co. in Lincoln, Neb., does some Web-based customer service with its distributors, but is leery of fielding E-mail from customers, said Bruce Smilie, Goodyear's manager of customer service for North America. "The big fear is that we won't be responsive enough," he said. □

## MOREONLINE

For call center resources, publications and organizations, visit [Computerworld online](http://Computerworld.com/online).  
[www.computerworld.com/more](http://www.computerworld.com/more)

with that trouble as well as to assist them in making sure their operational data is safe from year 2000 harm.

"Given the fact we have a limited IT staff, we don't have enough money or bodies to throw at every problem," said John McGinn, IT services administrator at the Oregon Department of Agriculture.

Brio's program, BI2000, doesn't fix applications themselves, but rather helps users move system data into a data mart or data warehouse. During the move, BI2000 looks for and fixes year 2000 inconsistencies in the data. Otherwise, it's no different from any other data movement tool. Once the data is there, more users can access it and do their own analyses in-

stead of passing their report requests along to overburdened IT staffers.

Metz Baking Co., a Deerfield, Ill.-based firm with 18 bakeries in 16 Midwestern states, implemented that approach recently by taking all the data generated from its IBM AS/400-based mainframes and running it into a data warehouse that measures about 40G bytes.

This approach "puts data in the hands of the users, gets the IT shop out of the middle and allows us to concentrate our

entire staff's efforts on making sure our software [applications are] year 2000-compliant," said Larry Hames ([larryh@metzbaking.com](mailto:larryh@metzbaking.com)), Metz's senior vice president of IT.

"This approach is distinct in that it isn't as concerned with the applications but helps protect the data itself," said Wayne Eckerson, an analyst at the Data Warehousing Institute in Gaithersburg, Md.

Brio will partner with IBM in this program, which should provide it with plenty of cus-

tomers. Eckerson said, because "IBM platforms support more non-Y2K-compliant reporting applications than any others."

Karen Tripp, applications development supervisor at Plymouth Rock Assurance Corp. in Boston, said Brio's warehousing approach has not only given more users in her company access to the data they need, but also let her organization replace "at least 20 old, difficult-to-maintain, C-based programs" originally written to build databases. Now the insurance company uses simple Visual Basic scripts for that purpose.

McGinn said the Oregon Agriculture Department took this approach because his small IT staff was getting swamped for data-report requests as year 2000 projects loomed more ominously. □

## MOREONLINE

For publications, resources, organizations and more related to data warehousing, visit [Computerworld online](http://Computerworld.com/online).  
[www.computerworld.com/more](http://www.computerworld.com/more)

### Four ways to protect data against year 2000 problems, ranked by time it takes to complete (fastest to slowest)

Method	What it does
Replication data store	Grabs data from legacy system and dumps it into a relational database
Dynamic data store	Extracts data from legacy system and cleans and reorganizes it before placing it into a relational database
Backup store for ERP data	Transforms, cleans and loads ERP data into a data store
Architected data mart	Consolidates legacy data and creates a full-blown, multidimensional data mart

# Microsoft targets enterprise apps

## Enters pact to build systems for NT users

By Julia King

MICROSOFT CORP. has tapped Cambridge Technology Partners Inc. (CTP) to help speed the development of enterprise business applications based on Microsoft technology.

Under an agreement announced last week, CTP, a \$600 million systems integrator in Cambridge, Mass., will develop so-called software frameworks based on the Windows NT operating system and other Microsoft technology. The customizable frameworks will serve as key building blocks that CTP or corporate customers can use to quickly develop electronic commerce and other applications according to individual business requirements.

Microsoft and CTP will jointly market and sell the frameworks and integration services, which the systems integrator will execute under its traditional fixed-time, fixed-price contracts.

Analysts said the nonexclusive agreement is especially beneficial to users seeking to integrate Microsoft technology into existing multivendor computing environments.

"Microsoft has had great suc-

cess with NT in many user environments, but there are obstacles in heterogeneous environments where there's a mix of Unix, NT and other operating systems," said Lewis Clark, an analyst at Dataquest in Lowell, Mass. That's where CTP's extensive systems integration expertise comes into play, he added.

Clark said Microsoft has similar alliances with KPMG Peat Marwick LLP and Ernst & Young LLP. Under the most recent alliance, CTP said it will focus on electronic-commerce, data warehousing, customer management and financial trading applications and rapid application deployment methods.

CTP will also bolster its Microsoft expertise, hiring 1,000 Microsoft certified systems engineers over the next three years. Earlier this year, Cambridge acquired Excell Data Corp., a Bellevue, Wash.-based consulting firm that specializes in Microsoft technology. Excell has 500 employees, including 120 Microsoft-certified technical workers.

CTP said it deployed several Microsoft technologies, including NT Server, Transaction Server and Windows NT Workstation, as part of an integrated three-tier customer service cen-

ter for Liberty Pensions Services, a U.K. division of Liberty International Holdings PLC.

In another project, CTP said it developed a business-to-business electronic procurement system for Australia's Telestra Corporation Ltd., which sells the service to its telecommunications customers. □

# FAQ: Changes in U.S. encryption policy

**Q: Is the Clinton administration finally going to ease restrictions on the export of encryption software?**

**A:** The Commerce Department says regulations will be in place this month formalizing a policy change announced in September.

**Q: What are the most important changes?**

**A:** Companies can now export midstrength encryption, with key lengths up to 56 bits, after a one-time governmental review — even if they don't have "key-recovery" plans. Under previous policy, a key-recovery plan was required to allow encrypted files to be decoded by a third party. In addition, the export of strong encryption is now permitted to a list of approved countries for insurance, health and medical companies (excluding biochemical and pharmaceutical manufacturers) as well as online merchants abroad. Previously, only banking had this special treatment.

**Q: What about U.S. companies with offices overseas?**

**A:** If those offices are part of the parent American company or a wholly owned subsidiary of the U.S. company, they now have the right to use strong encryption products from U.S. vendors. Previously, export licenses were required.

**Q: How can I get more specific information about approved countries and licensing/export procedures?**

**A:** The Commerce Department posts information about encryption export controls at [www.bxa.doc.gov/Encryption/Default.htm](http://www.bxa.doc.gov/Encryption/Default.htm).

— Sharon Mack







Actually, it works very well. Maybe because so much of it runs on Compaq. Four out of the five most popular Web sites are powered by Compaq. Hundreds of millions of hits are handled by Compaq platforms every day. Three-

Why does the moon  
stay in the sky?

What makes  
the stars twinkle?

How does  
the Internet work?

quarters of the top ISPs have standardized on Compaq for their Windows NT based Web hosting. And if you've ever received e-mail, chances are, we helped

get it to you. To find out how the Internet can help grow your business (and answer the other awe-inspiring mysteries of the universe), feel free to ask the source at 1-800-AT-COMPAQ. Or experience for yourself how well it works at [www.compaq.com/moon](http://www.compaq.com/moon).

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# Insurer asks federal court for Y2K ruling

By Thomas Hoffman

AN OHIO-BASED INSURANCE company has asked a federal court to decide whether the insurer is responsible for covering a software vendor that failed to make its systems year 2000-compliant.

Even though insurance coverage varies by state, the decision could have far-reaching repercussions on liability insurance coverage because such decisions "will begin to have a cumulative impact" on year 2000 rulings, said Scott Nathan, a partner at Nathan & Voltz, a Franklin,

Mass.-based law firm that handles both insurance and year 2000 issues.

The Cincinnati Insurance Co. in Fairfield, Ohio, has asked the U.S. District Court in Cedar Rapids, Iowa, to rule whether the insurer is required to defend Source Data Systems from a lawsuit

filed against it by a client whose system can't handle the millennium rollover.

The issue grew out of a July lawsuit filed in a Kentucky state court against Cedar Rapids-based Source Data by the Pineville Community Hospital Association. The association is seeking \$1.25 million to cover the cost of replacing the hospital management system Source Data installed in early 1996. Pineville found out a few months later that the system wasn't year 2000-compliant.

One problem for Source Data, Nathan said, is that its insurance policy with Cincinnati Insurance expired in November 1995, about five months before it installed the system for the hospital association. "The bottom line is that it's going to be tough for [Source Data] to demonstrate that there was property damage during the policy period," Nathan said.

## CEASE-AND-DESIST

In another year 2000-related government action last week, the Federal Reserve Board issued a cease-and-desist order against a New Mexico bank for failing to develop an adequate millennium project plan. Within 10 days of the order, which was made on Dec. 14, Zia New Mexico Bank in Tucumcari must appoint a year 2000 project manager. It also must develop a year 2000 contingency plan.

The order against Zia New Mexico Bank is the second such action taken by the Fed. It issued a cease-and-desist order against the Eatonton, Ga.-based Putnam-Greene Financial Corp. in November 1997. □

## Introducing

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## Exchange Server tools, fixes online by Dec. 31

By Roberta Fusaro

MICROSOFT CORP. last week said it will make a new service pack and several messaging migration tools for Exchange Server 5.5 available for free download from its Web site by Dec. 31.

Service Pack 2 for Exchange Server 5.5 is a collection of all Exchange Server fixes and enhancements issued to date, a Microsoft spokesman said.

New features include a replication utility that will let users at different companies replicate information in shared public folders, a wizard for moving servers among sites or organizations and Secure Multipurpose Internet Extensions Version 2 support in the Outlook for Macintosh mail client, which now also runs on the Mac OS 8.5.

The Microsoft service pack can be downloaded free from [www.backoffice.microsoft.com/downtrial/default.asp](http://www.backoffice.microsoft.com/downtrial/default.asp).

No updated information was available about beta and ship times for the next version of Exchange — code-named Platinum — which is due after the release of Microsoft's Office 2000 suite. □



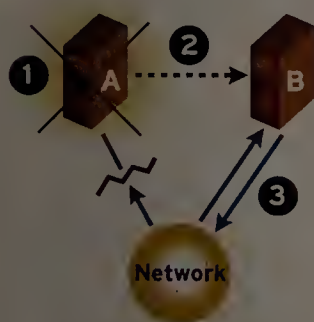
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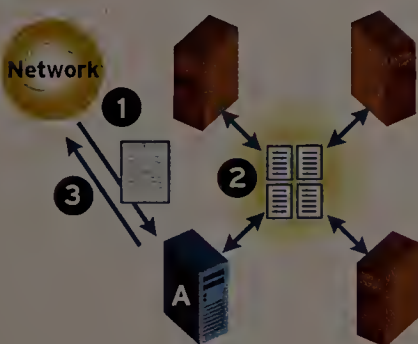
Check out [www.computerworld.com/more](http://www.computerworld.com/more) for more resources, *Computerworld* articles and links.

2-node high-availability cluster



1. Server A fails.
2. Clustering software alerts server B, which contains the same data and applications as server A.
3. Server B takes over the application duties and returns data to the network without interruption.

4-node performance cluster



1. Request for data comes in from the network.
2. The cluster divides up the work request into pieces. Each server handles its own portion of the request.
3. The nodes return their portions of the work to server A, which returns the requested data to the network. That happens faster than if server A had to do the work on its own.

## FAQ: Sorting through the cluster

## Q. What's the purpose of using clustering?

A. Clustering lets you avoid computer downtime, which can be costly if your business depends on available computers. Clustering could let you keep an older server as a fail-over to a newer, faster system. Performance clustering increases the application performance by spreading parts of it across many servers. That could improve response time for critical and large applications.

## Q. What kinds of companies use clustering?

A. Not just large companies — small companies can save thousands in downtime by protecting primary Unix or NT servers with a high-availability cluster. Branch offices may want to cluster smaller systems to protect the data at their locations, instead of in a central location. And companies with video or animation data use clustering to speed editing applications.

## Q. When did clustering start?

A. Digital Equipment Corp. and Tandem Computers Inc. began clustering in the 1970s and 1980s. Recently, as companies migrated applications off huge mainframes and minicomputers, Unix and NT clustering have gained momentum. Unix clustering began in the early 1990s, and NT clustering products have only begun to surface in the past few years. — Tim Ouellette

## Clustering

**DEFINITION:** Clustering is a way to link computers together to make programs more reliable or make them run faster. There are two methods of clustering computers. The most common is high-availability clustering, which links a second computer to a primary computer to act as a backup. If the primary system fails, the second computer picks up the duties of the primary system without a pause so users don't know there was ever a problem. The second method, called performance clustering, links computers together to team up and finish problems quicker than if one computer tried to tackle the same problem on its own.

## Two servers are better than one

By Tim Ouellette

JUST LIKE PEOPLE, computers often work better together than alone.

That's why more businesses than ever are thinking about clustering computers together to ensure that applications stay up and running at all times or that large applications can run faster.

Clustering is not just for companies with lots of computers and giant data centers. It gives older servers new life by allowing them to be used as backup systems to save money. Clustering is also good for retail stores that may want a cluster on-site to make sure their cash registers keep operating during the busy holiday season, says Jonathan Eunice, president of Illuminata Inc., a consultancy in Nashua, N.H. It can also help avoid the shutdowns caused by normal computer maintenance and upgrades.

## TWO REASONS TO CLUSTER

There are two very different types of clustering technologies: high availability and performance. High-availability clusters tie a backup computer to the primary system to take over the workload if the other fails.

Most of these computers can get around 99% availability on their own, analysts say, but users need better. "This sounds great until you realize that the missing 1% represents about 90 hours — over three and a half days of downtime per year," says a report by The Standish Group International Inc. in Dennis, Mass.

The other form of clustering, called perfor-

mance clustering or parallel computing, ties computers together to work at the same time on a problem, not as backups to one another.

"The movie *Titanic* couldn't have been done without clusters of computers doing the animation," Eunice says.

That's because technical computing needs huge applications and files that can slow down most computers. But performance clusters let each computer, or node, take a small piece of the work and get it done quicker than if one computer did it alone (see diagram at left).

But putting together a high-availability cluster isn't a matter of wiring two computers together. You must buy special software that can do the job of looking out for failures, keeping the data constant between the two computers and telling one computer to take over if another one fails. And that still doesn't guarantee perfect high availability.

A lot of clustering technology is "overblown, overhyped and under-[specified]," says James Johnson, president of The Standish Group.

He recommends caution in many cases because users could possibly have more failures from faulty clustering configurations than from typical failure problems.

Still, clustered server deployment will grow more than 160% during the next two years for high availability and scalability, The Standish Group predicts. □

Ouellette is a freelance writer in Scarborough, Maine.

## AT ISSUE

Use caution when deploying clustering

## CLUSTERING SOFTWARE

VENDOR	PRODUCT	PRICE
Microsoft	Microsoft Cluster Server	Part of Windows NT
Hewlett-Packard	MC/ServiceGuard	Ranges from \$3,500 to \$24,000
IBM	HACMP	Starts at \$4,500
Veritas	FirstWatch	Starts at \$3,500 per 2-node cluster
Digital Equipment	Ready-to-go clusters	Start at \$87,000 with DEC AlphaServers
Data General	Cluster in a box	Starts at \$30,000





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## O P I N I O N

**Price of progress**

For those of us who think the only good price is a discounted one, these final days of holiday shopping can have the atavistic thrill of the kill. Ignore for a moment those poor, misguided souls paying full price (and beyond) for talking Furbies. The rest of us are on the hunt for real value for our money.

So it was with particular interest that I read Gary H. Anthes' story in this week's issue ["The price had better be right," page 65] about smart pricing — the tricky art of shifting prices dynamically to maximize sales in a fickle, demanding market.

What Anthes found in his reporting is that IT is quietly driving a value-pricing revolution in certain industries. Airlines, insurance companies, hotels, car-rental agencies and even utilities have discovered that hitting the right price with customers can make all

the difference in the world.

It even can have a greater impact on profitability than higher sales volume or cost reductions, one McKinsey & Co. business study revealed.

Remember Deep Blue?



The chess-playing IBM RS/6000 supercomputer that bested world champion Garry Kasparov? The same massively parallel technology is behind United Airlines' new Orion system, a \$20 million inventory management system that forecasts customer demand and twiddles fare prices to make the most profit. A complex process that once took 24 hours on United's mainframe now is a 15-minute spin through tons of data on one 47-processor machine.

Companies literally couldn't handle the delicate balance of dynamic pricing without a backdrop of distributed systems, decision-support tools, sophisticated computer modeling and databases of customer histories. But the challenges inherent in coordinating and managing those different systems are monumental — especially at a time when year 2000 problems still loom and electronic-commerce strategies are in flux.

Still, there's a lot of good news here for IT professionals. Perhaps the best news of all is the unique opportunity this presents to pump revenue right into the business bottom line. Now that's real value for your money.

Maryfran Johnson, executive editor  
Internet: maryfran\_johnson@cw.com



## L E T T E R S

**Microsoft's Java may be a dangerous brew**

I HEREBY NOMINATE Microsoft's director of product management for development tools Tom Button's comment regarding Java — that no other programming language is controlled by only one vendor — as the most self-serving lie by Microsoft that week ["Microsoft wants to 'innovate' Java," CW, Nov. 23].

There are probably more programming languages controlled by a single vendor than not. How about Delphi, Rexx, ABAP/4, Self, PostScript, PowerBuilder or AppleScript? Every manufacturer of hardware has sole control of the instruction set — the programming language — for the hardware they design.

And last time I checked, Visual Basic, Visual Basic for Applications, VBScript, COM, DCOM and COM+ weren't exactly ANSI standards.

Justus Pendleton  
Somerville, Mass.  
justus@acm.org

THERE IS SOMETHING very ominous about the article by David Orenstein, "Microsoft wants to 'innovate' Java."

Back on Oct. 31, there were two internal Microsoft memorandums called Halloween memorandums that were made public and supposedly were verified by Microsoft.

What makes this little article so ominous is that in the first Halloween document, there is specific language that says in order for Microsoft to win, they need to "de-commoditize protocols & applications."

In light of the Halloween documents, Microsoft's attempt to 'innovate' Java appears to be nothing more than Microsoft's attempt to "de-commoditize" Java, which makes us all losers.

Robert Suchowierski Jr.  
Temple University  
Philadelphia  
rsuchowi@nimbus.temple.edu

The attempt to  
'innovate' Java  
appears to be  
nothing more than  
an attempt to 'de-  
commoditize' it.

**It's déjà vu all over again for polyester, programmers**

IS IT 1998 OR 1973? I think I just lost 25 years!

Recently, I was shocked to find out polyester is selling again! (Ugh. Been there, done that.)

Now I pick up the Nov. 23 issue of *Computerworld* to find a reference to Ed Yourdon, berating programmers for writing undocumented, spaghetti code (was that the same article Ed wrote in '74?); a developer whining about not having time to document (so what do you think weekends are for?); and a nontechnical person basking in the warmth of some article that obviously admonished us technoheads for abusing our "ominous power" [Letters].

If I have so much power, then how come I'm still in this industry?

And who said, "The more things change, the more they stay the same?"

Probably a tired Y2K assembler programmer!

Susan Kay Rathman, CCP  
Mounds View, Minn.  
Skrathman@aol.com

More letters, page 33

**Got milk? Not the Longhorns pictured in database story**

THE PHOTOGRAPH and brief item in the Nov. 23 issue of *Computerworld* about Edge Technology's bull database ["Web yields best of breed"] was quite fascinating. However, it was a bit off.

The cattle that are pictured are Texas Longhorns, a very famous, easily identifiable breed of beef cattle.

As a former dairyman with more than 20 years' experience, I can tell you that few, if any, sober,

sane farmers would match their Ayershire, Brown Swiss or Guernsey cows to a Longhorn bull, particularly if they're concerned with "parental history and milk quality."

I'm sure that few of your readers had a clue about this, but I couldn't help noticing.

Pete Grubbs  
Contributing editor  
OS/2 E-Zine  
Brookville, Pa.  
peg5@psu.edu

*Computerworld* welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, *Computerworld*, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.



# It could be a wonderful life for IT

Dan Gillmor

It's the time of year for journalists to hand out yuk-yuk gifts to the people we cover. I'd like to modify that practice just slightly, by suggesting gifts that various members of the technology community could give themselves — doing us all a favor in the long run.

**For Silicon Valley (and the entire tech industry):** a time-out from Internet Time. Nowhere on earth does the meaning of Internet Time seem clearer than in the heart of the world's technology community. Internet Time compresses normal life. It can lead people to skimp on ethics and reflection in pursuit of product deadlines. Technology's movers and shakers routinely form alliances today and then disparage and cheat one another tomorrow. They aim for Wall Street approval and disdain their customers. They show little loyalty and then act surprised when employees jump ship for companies that offer them better option packages.

I suspect that Internet Time is a per-



## We might all be better off if we could slow down, ever so briefly.

manent condition, but we might all be better off if we could slow down, ever so briefly, for some sorely needed reflection on morals, not just money and technological accomplishments.

**For Microsoft:** a conscience. No other company combines such dazzling brilliance and utter sleaze. Testimony and exhibits in two lawsuits against Microsoft — the federal/state antitrust action and Sun Microsystems' Java contract suit — have brought to light relentlessly anti-competitive tactics on the part of a company that has more than enough talent to have succeeded honestly.

"Subversion has always been our best tactic," said one Microsoft executive. He's right, but he didn't need to be. Sadly, given the attitudes and actions of the man in charge, Bill Gates, it's hard to see how Microsoft will reform itself until someone forces the issue.

**For the IT community:** an alternative. A generation ago, IT folks learned the hard way what happens when they accept monopolies as "the way it is" in technology. IBM's all-encompassing embrace may have been comforting in some ways, but it was an expensive reassurance.

Now IT has adopted a new, short-sighted mantra — "You can't get fired buying Microsoft" — and is learning to its should've-thought-of-that dismay that Microsoft is no different from any other monopolist: It tightens control and raises prices when the market permits. Is there any better reason to second-source your technology?

**For Wall Street:** a sense of reality. Investors are being led down a cruel path on many of the so-called Internet stocks, some of which may someday actually make money. The market continues to show that irrationality is a fundamental value.

Shame on the investment banks that take bad companies public; and shame

on brokers who peddle shabby deals to greedy investors. In the end, though, the greediest people end up getting only what they deserve: a whack in the wallet.

**For end users:** insistence on ease of use and reliability. The long-suffering computer user has been waiting since the dawn of the PC age for a device that is easy to use and reliable.

Despite many improvements, the PC has never been that device, largely because of buggy software that companies show no signs of fixing. We've bought them because we had few alternatives and because they did solve some problems.

Now, however, companies are coming up with information appliances that do one or a few things exceptionally well and reliably. The PalmPilot was one of the first, and many more are appearing. Let's vote with our wallets for reliable, easy-to-use gear — and do all technology users a favor.

**For everyone:** Technology aside, we should always remember that life, health and happiness are the greatest gifts of all. In the heart of this holiday season, may those be yours, too. □

Gillmor is technology columnist at the San Jose Mercury News. His E-mail address is [dgillmor@sjmercury.com](mailto:dgillmor@sjmercury.com).

# Wish list for an easier life on the road

David Moschella

Call me greedy, but as someone who has logged several million miles in the past decade, I know the Web could do a lot more to make my life more comfortable and productive.

So, if there's indeed a virtual Santa Claus, here's what I'm hoping for, and you don't have to be a self-employed road wanderer such as myself to agree.

From my Internet service provider, what I want most is cheap mass storage. Imagine a big, virtual Zip drive on which to store all of your key files. Not only would that guarantee easy file access from wherever I happen to be, it also would make backup much more reliable and convenient. And because there are many times when it's nice to be laptop-less, it would be great if I could pick up a telephone, dial a toll-free number and just listen to my E-mails. It would be especially cool if I could send my replies back as attached audio files.

From my telephone company, I still want something we should have had years ago. Could I please use just one telephone number for both my station-

ary and mobile needs? A simple office/cellular docking station would do. Whenever I'm travelling, calls could, at my discretion, be forwarded to either my cell phone or voice-mail system. High-tech America should be embarrassed that our mobile technology continues to lag behind the rest of the world. Here's one way to catch up.

From America's top-rated business hotels, all I want is access to the Web. Why WebTV or an equivalent isn't available in every Hyatt and Marriott remains a mystery. If my room had unlimited Internet access, a big screen, nice sound and even a cheap printer, it would certainly make me tilt toward one hotel chain over another. I'd even pay a slightly higher daily rate. I don't think I'm alone.

The airlines could certainly do their bit. At least on long, international flights, it would be very nice if my seat had its own plug and power supply. If I didn't have to worry about battery power, I'd be much more likely to travel with my CD-ROM drive and headset. Up front in business class, there should even be a small library of music, games and movies. And why aren't there more cubicles to rent at airports, such as at Phoenix International, where I can use my notebook and connect to the Internet or the home office between flights?

It goes without saying that there still isn't a single airport that could be accurately called "Web friendly."

As for content, we tend to think that the Web already of-

fers more information than we would ever want or need. But there's a huge and critical range of content that remains largely unavailable: our libraries. Indeed, one of the next, great untapped Web opportunities will be putting books online. Knowing that I have access to all of my personal books and reference sources would be most useful and reassuring.

Finally, although it isn't really an on-the-road issue, I have one request for the company many of us depend on most. Dear Microsoft: Could you kindly termi-

nate all efforts to anticipate what I'm trying to do? Few things are less useful and more annoying than your persistent efforts to 1) launch Internet Explorer, 2) suggest your letter-writing wizard and 3) insist that every time I type a uniform resource locator, I must really want it to underline itself and turn blue.

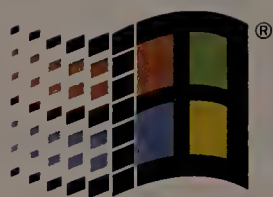
That's it for me; what's on your list? □

Moschella is an author, independent consultant and weekly columnist for Computerworld. His E-mail address is [dmoschella@earthlink.net](mailto:dmoschella@earthlink.net).



## Could I please use just one telephone number for both my stationary and mobile needs?





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# Treat users as customers? Now there's a bad idea

Lenny Liebmann

**O**ne of the buzz-concepts that has successfully foisted itself upon the IT community is that information technology departments need to treat internal users as customers. But users are not customers. They never will be. And, even more important, they don't *want* to be.

Sure, there's some validity to the notion of user-as-customer, especially for IT groups that historically haven't done a good job of assessing business requirements and monitoring systems usability. But to take the metaphor too far, as some have done, is totally counterproductive.

I run a business. I have customers. I try to determine what they need, and I try to give it to them. But I also make some rules. If a customer is consistently abusive or irrational, I can choose not to do business with him. I can negotiate a premium price if a customer is seeking a premium



## Users never ask us how we feel!

service. I can chase down jobs that, in addition to providing a paycheck, will also advance my personal development. And I can freely decline projects that seem doomed to failure.

Know any IT users who can handle being treated like that?

The foolishness of taking the user-as-customer concept at face value is clearly demonstrated by the largely mythological service-level agreement (SLA), which is supposed to help codify the customer-vendor relationship. IT makes a service-level guarantee to

the internal "customer" in hopes of achieving some equivalent of customer satisfaction.

But it doesn't happen. Despite the hype, performance/availability SLAs between IT departments and lines of business are virtually nonexistent. Here's why:

First, put yourself in the user's shoes. Would you agree to anything less than 100% availability? Agreeing to 98% availability would be tantamount to asking for at least 2% downtime. And no one's asking you to pay for those last two expensive-to-achieve performance points. You want 100%, and you ask for 100%.

Second, what's the downside to missing an SLA target? Dock the network manager a week's pay? Instant dismissal? An unenforceable agreement is no agreement at all.

No, the idea of creating internal vendor-customer relationships is a fantasy. Like all good fantasies, it can add spice to a marriage that might otherwise fail. But what's really needed is some marriage counseling for both parties, because while IT is devouring self-help books about how it should listen more attentively and put on sexy outfits to please its partner, the business is staring

at the TV and dreaming of Pamela Sue. It never asks us how *we* feel!

Maybe for the marriage to work, the business side should finally get off the La-Z-Boy and realize just how much it needs IT. Maybe we should spend less time trying to "vendorize" IT, and focus more on "customerizing" lines-of-business management — including a fresh look at strategies such as usage-based chargeback and insourcing that make the business accountable for how it consumes technology.

For a long time, IT has been hearing that it's not responsive to business requirements. And that used to be true. But IT has clearly become critical for companies that want to succeed in today's global, digital marketplace. That means IT needs to be supported, nurtured and valued.

So let's stop focusing exclusively on how IT departments need to change. It's time for business executives to change, too — to become more responsive to the evolving needs of their increasingly important technologists. □

*Liebmann is a partner at IP&D, a Highlands, N.J.-based consulting firm specializing in IT/business alignment. His E-mail address is ll@exit109.com.*

# Make knowledge an asset for the whole company

Don Tapscott

**A**lthough we live in the so-called Information Age, knowledge is the true asset. Information we have in abundance, piling up in databases and streaming onto desktops over broadband networks.

Knowledge, on the other hand, is information that has been edited, put into context and analyzed in a way that makes it meaningful — and therefore valuable to an organization.

Immediacy is the driver of today's economy. Consequently, success in the marketplace flows to those organizations that can most quickly exploit their "tacit knowledge" — valuable things people know from experience, intuition or study. Organizations routinely make multimillion-dollar decisions based heavily on the tacit knowledge of key individuals.

Often this sort of knowledge is widely dispersed and closely held, and most companies still have only a weak grasp of the breadth and depth of their collective intelligence. Knowledge flows through the company in a sluggish and erratic manner. And because it's typically stored only in individuals' memories, this knowledge is lost to the corporation

when people leave the company.

If organizations are going to fully capitalize on their intellectual capital, they must devise systems for quickly compiling and retaining tacit knowledge, building intellectual inventories as individuals continue to learn and making these assets instantly available to the people who need them. Part of that is building a knowledge repository.

A knowledge repository might house transcripts or audiotapes from strategic planning sessions, consultants' reports in text or multimedia formats, videotaped presentations, market-trend analysis and any number of information-rich resources. Knowledge stored in digitized form can be processed, indexed, searched, sorted, converted, retrieved and transmitted relatively easily and cost-effectively.

Because knowledge is their core competence, IBM consultants, for

example, routinely share ideas and solutions with one another through their own networks of professional contacts. But with thousands of consultants deployed across the globe, the informal networks can't possibly embrace the breadth of the organization's expertise.

IBM's response is to maintain dozens of knowledge repositories that correspond to the various specialized services that its consultants provide. Each repository contains intellectual capital — project proposals and work papers, engagement summaries, presentations and reports, process maps, software solutions and so forth.

Consultants pursuing a new business opportunity anywhere in the world can search the repositories for relevant information to help them develop stronger proposals. Practitioners en-

gaged in a client project can mine the repositories for solutions to specific problems.

Maintaining the repositories requires effort and discipline. The standardized format for new project plans forces consultants to indicate how they intend to reuse intellectual capital to execute an assignment. Afterward, consultants must specify in standard summary reports how they deployed existing knowledge resources to serve the customer and what new intellectual capital they have contributed to the repository.

IBM found that this process reduced the time spent preparing proposals by as much as two-thirds and shortened the development of client deliverables by as much as 60%.

By leveraging the knowledge of their peers, a smart organization knows what it knows — and swift deployment helps it reap the full benefit of that insight. □

*Tapscott is chairman of the Alliance for Converging Technologies, a think tank investigating how the Net changes business strategy. Blueprint to the Digital Economy (McGraw-Hill, 1998) was written by alliance members.*



## A smart organization knows what it knows.



## LETTERS

## 'Wrong' face was put on true winners and losers of the H-1B visa program

**T**HE ARTICLE "The many faces of the H-1B program" [CW, Nov. 23] was informative and insightful. As a corporate technical recruiter in a consul-

and H-1Bs generally want to be full-time employees.

However, there is a catch. We find that many sponsored foreign employees are loyal until they get their green cards or their H-1Bs are transferred via another employer. Then they join the highly lucrative consulting world.

The article failed to mention what it costs the U.S. employers to sponsor or transfer H-1B employees. We must pay attorney's fees ranging from \$3,000 to \$5,000. When the H-1B period ends, the next step is the green card, which is an even greater financial commitment.

The case of H-1Bs is a mixed blessing. It's a situation where one wonders who is really using whom?

Melinda White  
Long Beach, Calif.  
mwhite@stc.com

**I** WAS VERY disappointed to read Barb Cole-Gomolski's one-sided article, "The many faces of the H-1B program."

It should have been titled "The wrong face of an H-1B program."

Her lack of information on the H-1B program is apparent.

Many companies sponsor foreign nationals because they are the best qualified for the job.

We believe in paying them competitively and fairly. The Labor Condition Applications demand this.

It is not legal to pay an H-1B

### QuickStudy provides outstanding repackaging of info

**I** ENCOUNTERED QuickStudy for the first time today, and my hat's off to you.

I was just pitching to my technical folks how we can provide more value on our Web site by sharing our technical knowledge in a non-sales-oriented fashion. Now I have a sterling example to illustrate what I mean.

Admittedly, you folks are in the information business, but to repackage information this way is still unusual. Your execution

is outstanding. Nice work.

Stuart Henigson  
Pacific CommWare Inc.  
Ashland, Ore.  
stuarth@pacificcommware.com

### Love at first sight?

**S**TARTED READING about three weeks ago ... can't believe the info. Great stuff.

C. Simber  
Lockheed Martin Corp.  
Moorestown, N.J.  
csimber@lmco.com

## Will crash-prone Windows NT torpedo Navy's command and control plans?

**T**HE NOV. 30 ISSUE of *Computerworld* contained an insert, "Windows NT World IDG Special Report," that contained a story ["U.S. Navy brings command & control to NT," p. N10] by Bob Brewin that is positively scary.

This story was a report on field usage by the U.S. Navy of Windows NT as a basis for its Global Command and Control System-Maritime.

Less than a month ago, I read a report about a naval programmer who was transferred because he publicly stated that crashes by Windows NT were the reason a naval warship had to be towed into port for repairs.

In the Windows NT World insert story, we are assured that Windows NT has completed a test for over 1,000 hours with

over 95% availability. It does not require much computing power to determine that 1,000 hours is less than 42 days or just six weeks.

Ninety-six percent availability — which is definitely over 95% — would give us just over 40 days of availability.

I suggest that we all write to

our congressmen and senators to have them prohibit implementation of this flawed system until it has passed a 10,000-hour shakedown with an availability rate of not less than 99.995%.

Charles J. Lingo  
San Jose, Calif.  
clingo@ihot.com

## Review aside, Michelin tool was deflating experience

**I** READ WITH INTEREST (and considerable disbelief) your rave review of Michelin Tire's Bib Net Web site ["Michelin links dealers," CW, Nov. 30].

We are one of Michelin's larger dealers, and we tried the Bib Net system for roughly 60 days before pulling the plug on it. As a tool to process Delivery Receipts, it was both tedious and

cumbersome, and it took almost twice as long as processing via a telephone call.

One of our other vendors gives us direct access to their mainframe, and it is infinitely faster.

John Boots  
Stringer Tire Co.  
Jacksonville, Fla.  
JohnBoots1@aol.com

## Linux as database: 'Bulletproof' OS takes time commitment

**I** WAS SURPRISED to see the headline "Linux gains support from database vendors" [CW, Nov. 23] after my very recent experience with Linux databases.

After projecting the license costs to adopt Microsoft's SQL Server for a Web database project, I recently decided to explore the Linux alternative. Several Linux converts suggested that I explore using Sybase's Adaptive Server Enterprise (ASE), which is free for Linux.

At the Sybase site, I did find pointers to several third parties where I could supposedly download a binary file that contains the ASE executables and source. I tried several times to access the download areas on the Red Hat site and several mirror sites and was unable to actually access the ASE files.

However, there's no documentation for this software, and Sybase will not provide support, not even for a fee. (The Sybase Web site asserts that documentation is available from the Red Hat site, but it isn't, and Red Hat emphatically denies ever having seen any documentation.)

Ultimately, I concluded that switching my project to Linux would cost hundreds of hours of

extra time (my honest estimate of the extra time required was 1,200 hours).

Assuming that my time is valued at something more than minimum wage, I concluded that it would be cheaper to

ENJOYED YOUR article "Linux gains support from database vendors."

As background, I've become somewhat anti-Microsoft and have been converting to Linux where possible/applicable.

I get better reliability and predictability from Linux than from NT or Win9x.

I am not surprised that major companies, with a large installed base of other Unix vendors, would be leery of transitioning to Linux.

They have little to gain, save costs. The mission criticality and comfort afforded by a known system are of more value to them than shifting to a system they consider unproven.

What a number of folks have started to discover is that Linux — when one uses a stable kernel and doesn't play the hobbyist/hacker — is pretty close to being

bulletproof.

Most (admittedly not all) vulnerabilities are fixed faster in Linux than more conventionally developed operating systems because there's not a change control board to go through, but rather, a rapid and efficient peer review system.

Gerry Creuger  
Mapping Sciences Laboratory  
Texas A&M University  
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LINUX SUPPORT		
The four largest database vendors all will have released flagship database products for Linux by next month		
Vendor	Product	Release date
IBM	DB2 beta	December
Oracle	Oracle8	October
Sybase	Adaptive Server	September
Informix	Informix-SE	July

## Linux gains support from database vendors

David Orenstein

LINUX'S ENTERPRISE credibility climbed further during the past two weeks as IBM released its DB2 database for Linux and its Transarc subsidiary announced that the upcoming version of its AFS file server will include a Linux port.

With IBM's Dec. 7 beta release of DB2, all of the four largest database makers

release of AFS could help drive the adoption of Linux among researchers in high-energy physics at Stanford University's Linear Accelerator in Palo Alto, Calif. Assistant director of computing services Chuck Boelheim said researchers use the Solaris version of AFS file server to serve about 600G bytes of data to collaborators in about a

pay Microsoft's \$7,397 price tag to use SQL Server on a dual-processor Web server.

In short, Sybase's strategy for releasing its database for Linux might actually be the opposite of "support."

Mark J. Welch  
Web Site Banner Advertising  
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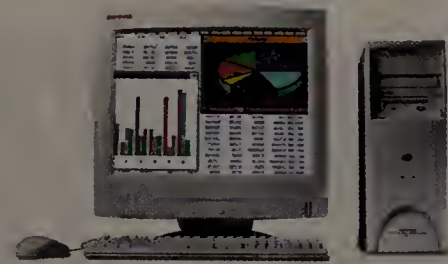


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# Corporate Strategies

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## Briefs

### Millennium updates

With a little less than a year to go, the world's major airlines have spent, on average, only 36% of their year 2000 software remediation budgets. That's according to Proma Creative Solutions Ltd., a Tel Aviv company that tracks large companies' year 2000 spending. Year 2000 reports on about 2,000 companies, including the Fortune 500, are available at Proma's Web site ([www.2000amisafe.com](http://www.2000amisafe.com)). In a separate report, Galorath Inc., an El Segundo, Calif.-based software and consulting company, said software defects caused by changes made during year 2000 repairs will cost U.S. companies between \$98 billion and \$188 billion to fix.

### CIO appointments

Randy Richardson was named senior vice president of information services at Talbots Inc., a fashion retailer in Hingham, Mass. Richardson was previously senior vice president and CIO at Best Buy Co. in Minneapolis. ... Joseph Giamelli was named vice president and CIO at Barnes & Noble Inc.'s 1,008-store retail division. Before joining the New York-based bookseller, Giamelli was vice president of information systems at the international division of Toys R Us Inc. in Rochelle Park, N.J.

### What takes up a retail industry CIO's time?

IT strategy	16%
Business operations	14%
Project status & review	12%
Business strategy	12%
IT applications	12%
IT operations/ infrastructure	10%
IT vendor relationships	9%
IT budgeting & planning	8%
Human resources	6%
Other	1%

Source: The 1998 State of Retail Technology report, RT Magazine, Darien, Conn.

## Penney's turns to IT for help

► Seeks merchandising improvements via extranet



J. C. Penney will be able to cut the time it takes to order and stock merchandise, says CIO Dave Evans.

By David Orenstein  
and Thomas Hoffman

IT ALONE CAN'T restore the slipping profits at J. C. Penney Co., but as the crucial holiday shopping season reaches a fever pitch, the retailer's information technology department is busy working on a sweeping campaign to cut costs and increase revenue.

Plano, Texas-based J. C. Penney began the year by closing 75

department stores and laying off nearly 5,000 workers. And its sales declines have continued: Compared with the same period last year, same-store sales declined 4% in the quarter ended Oct. 31. When CEO James Oesterreicher announced the downsizing in January, he said he expected that refinements to the company's merchandising and procurement systems would save as much as \$150 million this year and next.

J. C. Penney's new merchandising system, called Fashion

Accelerated Shipping Technique (FAST), speeds merchandise procurement by centralizing control of decisions and by letting suppliers populate the company's merchandise database directly rather than having workers key in data, said CIO Dave Evans. The project began in October 1997 and is expected to be completed by the middle of next year.

Using FAST, Evans said, the company will be able to cut to about a month the time it takes to order and stock a dress, for example. That's quicker by several weeks. Shoppers expect to see a new assortment every month, so a sleeker supply chain can ensure that a retailer

Penney's, page 40

### RETAIL SYSTEMS

## Integration will save millions

► Stock exchange to reap benefits of merger in back-end systems

By Thomas Hoffman  
and Michael Goldberg  
NEW YORK

THE NATIONAL ASSOCIATION of Securities Dealers Inc. (NASD) may be buying the American Stock Exchange, but it doesn't plan to merge the "open outcry" auction market with the all-electronic Nasdaq Stock Market Inc. Instead, NASD's "tens of millions of dollars" in cost savings will stem from merging common back-office systems.

Starting next month, NASD will begin to migrate the American Stock Exchange's core financial operations, including finance, administration, human resources and marketing, on to systems run by Nasdaq.

NASD hopes to achieve much of the cost savings from that integration because "40% of the cost center at a [stock] exchange is technology," said Gregor S. Ballar, CIO at NASD. The cost savings — tens of millions of dollars, he predicted — are expected to result from reducing the combined maintenance and development costs for the two organizations.

Moving the American Stock Exchange's financial systems to Nasdaq platforms appears to be relatively straightforward. But



Technology is a big part of the cost of running a stock exchange, says Gregor S. Ballar, CIO at NASD

moving the exchange's equity book over to Nasdaq has been fraught with political and strategic challenges.

The American Stock Exchange and the New York Stock Exchange (NYSE) use the same company to handle their back-office operations — the Securities Industry Automation Corp. (SIAC) in Brooklyn, N.Y. — so the American Stock Exchange has been using an older version of NYSE's equity book for the past few years. The American Stock Exchange equity book, which keeps track of incoming stock orders, currently operates

on Digital Equipment Corp. Alpha servers running OpenVMS.

NASD plans to shift the American Stock Exchange equity book to a Tandem Computers Inc. pilot system next summer. Until then, it has worked out a deal for the exchange to share the more current Unix/X terminal-based NYSE equity book beginning next month, said William T. Quinn, vice president of market operations and trading floor systems at the American Stock Exchange.

That was a little tricky because Nasdaq and NYSE com-

Stock exchanges, page 40

## Automation, ERP on tap for two firms

By Craig Stedman

GREAT LAKES CHEESE CO. and OSF Inc. both are midsize companies that still run key parts of their businesses manually. They both have small IT staffs. And they're now counting on AS/400-based enterprise resource planning (ERP) applications to automate the full breadth of their operations.

The reason is simplicity itself, because ease of installation and use are hallmarks of IBM's AS/400 systems. But information technology executives at the two companies said the ERP projects still are expected to stretch their capacities for rolling out technology and training users.

"This is going to be a big challenge, no question about it," said Ira Kalmus, information systems manager at Great Lakes Cheese. The Hiram, Ohio, cheese maker next year plans to install order-entry, inventory-management and production-scheduling applications devel-

Automation, page 40





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## Penney's

CONTINUED FROM PAGE 37

has the goods when they're needed.

But analyst Joseph Ronning at Brown Brothers Harriman & Co. in New York said J. C. Penney could have started sooner. Wal-Mart Stores Inc., for instance, has focused on state-of-the-art merchandising for years, he said.

Even with the improvements, J. C. Penney's supply chain could remain relatively slow because of its heavy assortment (nearly 50%) of private-label goods, Ronning added. Such merchandise can't be procured as quickly. "It's different than for a Federated [Stores Inc.], which can call Tommy Hilfiger for a new order of pants and get them right away," he said.

J. C. Penney's extranet (see story at right) was designed to improve merchandise planning, Evans said. The Web service lets suppliers analyze sales data to see, for example, how various colors of a particular sweater are selling in each store. Ronning said the chain's ability to manage and plan inventory took a hit when hundreds of experienced managers took early retirement packages during the downsizing.

J. C. Penney also is looking to an intranet for efficiency. The system includes applications that let employees update their personnel records and schedules, Evans said. A separate client/server system makes procurement more efficient.

To increase revenue, Evans' top priority is building JCPenney.com into a top online shopping site, he said. J. C. Penney's long history as a major catalog retailer means it can reliably fulfill a high volume of orders around the country, he

said. The chain also is a well-known and trusted brand.

Kate Delhagen, an analyst at Forrester Research Inc. in Cambridge, Mass., said that after years of small experiments, J. C. Penney still could make a lucrative expansion to the Web, because few major general-merchandise chains have taken a serious stab at it. □

### Penney saved is Penney earned

J. C. Penney's efforts to regain its competitive abilities take a lot of work.

Some were designed to increase efficiency — such as overhauling stores' merchandising systems and deploying a new extranet for 3,000 suppliers and an intranet that reaches virtually every employee.

Others are needed to increase revenue and follow shoppers to the Web — such as building up an online store to electrify J. C. Penney's \$4 billion catalog business. So far, only 3,000 of 80,000 catalog items are on the site.

Meanwhile, IT is working to bring uniformity to the systems of six major drugstore chains that J. C. Penney acquired during the past few years. J. C. Penney executives like the fast growth of health care retailing but have found that integrating patient records systems is sensitive and exacting work.

Although J. C. Penney keeps a lid on its IT budget of 1% of revenue, that still leaves the chain with a budget of \$300 million this year, said CIO Dave Evans. And the company is beginning to wrap up its estimated \$43 million war with the year 2000 problem.

— David Orenstein

## Automation, ERP on tap

CONTINUED FROM PAGE 37

oped by Infinium Software Inc.

For one thing, the \$650 million company now has an IT staff of only five people. Three more slots are due to be added, but Kalmus said an initial rollout of Infinium's financial software and a recent relocation of Great Lakes Cheese's headquarters and largest manufacturing plant "have really put us on a tight schedule" for the 1999 project.

To help prevent the IT department from getting overloaded, Kalmus added, manual operations such as buying raw materials and tracking their inventories won't be automated until late next year. The company will focus on order-entry, production-scheduling and management of finished-goods inventories in the first phase of the ERP project, which is targeted for completion in June.

Training users also is a tall order, Kalmus said. Tasks that still are done manually at Great Lakes Cheese range from creating financial reports to inspecting trucks that transfer products from one plant to another to find out exactly what items are inside.

"It's hard to change the nature of an old-style family business that didn't really see the computer as a tool," he said.

OSF, a Toronto-based maker of retail-

store shelving, faces a similar situation as it looks to expand an installation of J. D. Edwards & Co.'s ERP applications to include production-planning and management functions that are mostly done manually now.

The manufacturing software being piloted now is due for wider use early next year. Expected benefits include more cost-effective work-scheduling and improved capabilities for tracking orders and reacting to last-minute changes by customers, said Delvin Fletcher, vice president of IT at OSF.

But training manufacturing managers and shop-floor workers at the company's 12 plants "is by far our biggest issue," Fletcher said. "You need a lot of time and patience." For example, the new software will require the plants to do more disciplined production planning and data-collection than the largely "intuitive process" they get by with now, he added.

Even for firms counting on AS/400 applications to smooth their path to an ERP system, most installations are "not just a question of dropping in software," said Joshua Greenbaum, an independent software analyst in Berkeley, Calif. "These companies are changing a lot of how their employees function." □

## Stock exchanges

CONTINUED FROM PAGE 37

pete directly as the nation's top equity exchanges. In the past there was little conflict between NYSE and the American Stock Exchange sharing systems because the latter is primarily an options exchange.

Still, NYSE "was pretty fair" about extending support to the American Stock Exchange for its equity book, Bailar said. Meanwhile, the exchange will continue

to use SIAC's services into "the foreseeable future," said Bailar, who added he isn't overly concerned about the potential for proprietary NASD information trickling over to the NYSE.

"We'll just have to be careful about what's discussed in SIAC's cafeteria," he said half-jokingly.

Potential NYSE/Nasdaq conflicts at SIAC do exist, "but no more than they did in the past" between NYSE and the American Stock Exchange, said Octavio Marenzi, research director at Meridien Research Inc. in Newton, Mass. □

## Snapshot

### TOP IT PRIORITIES, BY INDUSTRY

INDUSTRY	TOP PRIORITY
Aerospace	Improving quality
Airlines	Updating technology
Chemicals	Business process re-engineering
Distribution	Business process re-engineering
Financial services	Cutting costs
Government	Year 2000
Health care	Client/server environment
Insurance	Technical architecture
Manufacturing	Business alignment
Retail/restaurant	Business alignment
Transportation	Improving quality
Utilities	Business alignment

Base: Interviews with 426 worldwide companies, November 1998

Source: Cutter Information Corp., Arlington, Mass.

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## Briefs

### ONLINE NEWS HOUNDS

What topics do you read about online?

National/international events	61%
Business	39%
Sports	34.4%
Entertainment	31.3%
Local events	25.9%
Technology	20.6%

Base: 2,200 online users; multiple responses allowed

Source: Jupiter Communications Inc., New York

### Internet enabler

Netscape Communications Corp. in Mountain View, Calif., has delivered a developer preview version of its next-generation Gecko browsing engine that can make any application, operating system or device ready for the Internet. The small Gecko engine features updated standards support and speedy performance. The final version is expected in early 1999.

### Managing IP addresses

Process Software Corp. in Framingham, Mass., has unveiled an application to handle Internet Protocol address management — a hot button for network managers. Network managers often keep track of the addresses of users and network devices in a spreadsheet, but that technique breaks down in a large network, officials said. Process Software's IP AddressWorks lets managers change network configurations and IP addresses from a central location. IP AddressWorks is expected to ship by April on Windows NT, OpenVMS and Unix, starting at \$2 per node.

### Domain name deal

Internet portal company Yahoo Inc. in Santa Clara, Calif., will promote domain name registration services from Network Solutions Inc. in Herndon, Va., the companies have announced. Network Solutions will advertise and be promoted on various Yahoo portal sites globally. The deal takes effect Jan. 1.

## Sites start 'chatting' with customers

By Sharon Machlis

AS COMPANIES SEEK to beef up online customer service by offering real-time text-based chat, they're looking at how to maximize the effectiveness of the technology as well as staff resources.

At 1-800-Flowers Inc., customer-service representatives are trained to handle telephone, E-mail and chat queries, allowing for more flexibility depending on whether calls or chat requests are heavier at a given moment.

About 85% of the questions consumers ask could be answered on the Web site's service

Players in the Web customer service space include:

VENDOR	WEB SITE	PRODUCT
Acuity Corp. Austin, Texas	www.acuity.com	WebCenter Express
Balisoft Technologies Inc. Toronto	www.balisoft.com	Livecontact
Business Evolution Inc. Princeton, N.J.	www.busessevolution.com	Once Express
EShare Technologies Inc. Commack, N.Y.	www.eshare.com	NetAgent
NetDialog Inc. San Mateo, Calif.	www.netdialog.com	ICare
Silknet Software Inc. Manchester, N.H.	www.silknet.com	EBusiness System

area, said Donna Iucolano, vice president of interactive services at 1-800-Flowers. "But that's OK," she said, explaining that she believes the company is in the service business as much as the floral business.

Online reps also help with gift-buying suggestions and can "push" appropriate Web pages out to customers as they make recommendations. That lets them not merely deal with problems, but help encourage shoppers to make purchases.

For now, the service is available from 9 a.m. to 9 p.m., but Iucolano said she hopes to expand it to 24 hours to match Chatting, page 42

## Sun license model widens Java access

► But not all vendors are pleased with change

By Carol Sliwa

SUN MICROSYSTEMS INC.'s new Community Source License model is intended to bring more vendors into the Java fold and keep the Java platform from fragmenting.

Corporate users continually say they'd like to see Java vendors on the same page, but reaction to Sun's licensing model remains split — particularly among "clean-room" vendors that create their own Java products by following Sun's Java specification but don't license Sun source code to do it.

"The new license would be equivalent to Sun publishing a cookbook. Anyone can find the recipes. The catch is, each time you cook, you owe a tax to Sun," said Jim Bell, general manager of Hewlett-Packard Co.'s embedded software operation, which makes a clean-

room virtual machine.

Under the new licensing model, the cookbook is free. Anyone can use, modify and share Java source code without paying the up-front fee that has been a barrier to entry for some companies and a source of complaint for others.

But the Community Source License doesn't eliminate royalty fees. Whenever a company ships a binary product, Sun's tariff kicks in. As one Sun official put it, "We don't make money unless you make money."

Java royalties are based on volume and field of use, said Sun Vice President Jim Mitchell. The fees lower as volume increases, and they vary based on the amount of Sun code used. For instance, a small footprint Java runtime environment for set-top boxes might carry a smaller royalty fee than a \$1,000 computer, he said.

Sun, page 42



J. P. Morgan's Douglas Gardner: Not interested in the source code

## Books, music, auctions top holiday destinations

By Sharon Machlis

WITH JUST A FEW more shopping days until Christmas, Web retailers are making their final efforts to snare consumer dollars. Our weekly update on Web holiday shopping continues:

■ Book and CD sites were the most popular shopping destinations in early December, according to NetRating's "Holiday CommerceTrack," which measures site traffic but not sales. Such sites attracted 16.2% of Internet

users, who spent an average of 14 minutes per week on such sites. The leader: Amazon.com, with an almost 8% reach, followed by CDNow Inc. at 3.4%.

NetRatings generates its numbers by measuring the surfing habits of a panel of more than 4,000 Internet users who access the Web from home (NetRatings Inc., Milpitas, Calif., www.netratings.com).

■ Auctions ranked as the No. 2 category, with 12% of Web Books, page 42



## World Wide Wait

The average time, in seconds, to download a home page from one of 40 business-related Web sites during business hours for the week of Dec. 7, 1998

### Top 5 best-performing Web sites

UUnet	4.92
Netscape	5.03
Microsoft	5.37
AltaVista	5.42
Hewlett-Packard	5.99

### Best areas to Web surf

Kansas City, Mo.	6.37
Cleveland	6.71
Omaha	6.94

### Worst areas to Web surf

Phoenix	20.18
Columbus, Ohio	21.31
Tampa, Fla.	18.64

Source: Keynote Systems Inc. (www.keynote.com), San Mateo, Calif.



# Internet rife with year 2000 sites

► *Range from the intelligent to the inane*

By Nancy Weil

HUNDREDS OF INTERNET sites include information, of varying accuracy, on the year 2000 computer flaw. Here's what's out there:

■ [www.senate.gov/~y2k/](http://www.senate.gov/~y2k/) — The U.S. Senate Special Committee on the Year 2000 Technology Problem site.

■ [www.senate.gov/~bennett/y2k.html](http://www.senate.gov/~bennett/y2k.html) — A link from the home

page of Sen. Bob Bennett (R-Utah), chairman of the Senate Year 2000 Committee.

■ [www.cpsr.org](http://www.cpsr.org) — Computer Professionals for Social Responsibility has a link on its Web site for a thorough listing of rumor, speculation and prediction.

■ [www.computerworld.com/news/year\\_2000/index.html](http://www.computerworld.com/news/year_2000/index.html) — Computerworld's collection of year 2000 links and resources.

■ [www.yourdon.com](http://www.yourdon.com) — Software

engineering consultant and author Ed Yourdon is often quoted, and, he contends, misquoted, regarding his thoughts on year 2000.

His site presents his unfiltered, often witty, views.

■ [www.yardeni.com](http://www.yardeni.com) — Ed Yardeni, chief economist at Deutsche Bank Securities in New York, has links from his site to year 2000 information.

■ [www.year2000.com](http://www.year2000.com) — This site features writings and links from Peter de Jager, one of the first to

sound the year 2000 alarm in an oft-quoted September 1993 Computerworld article.

■ [www.prepare4y2k.com](http://www.prepare4y2k.com) — Preparation advice, opinion, rumor, speculation and innuendo with links to a range of other year 2000 sites.

■ [www.survivey2k.com](http://www.survivey2k.com) — Similar to [www.prepare4y2k.com](http://www.prepare4y2k.com), but with exclamation points.

■ [www.utne.com/y2k/](http://www.utne.com/y2k/) — The alternative monthly publication *Utne Reader's* year 2000 report. Also included is a citizen's action guide. □

Weil writes for the *IDG News Service* in Boston.

## Chatting

CONTINUED FROM PAGE 41

the phone center.

Will the move save money for 1-800-Flowers? "My gut tells me you're really going to be trading one cost for another," Iucolano said. Telecommunication costs are lower on the Internet, but representatives tend to spend more time with each customer.

While the chat technology lets a service representative handle four to six queries at a time on the Web, they typically handle only two, she said.

Still, she said she's pleased with chat customer service since the September rollout of software from EShare Technologies Inc. in Commack, N.Y.

J&R Electronics Inc. is launching its chat capabilities on high-priority Web pages, such as those on which shoppers enter credit-card information. The New York-based company will likely increase its use of the technology later, because it is eager to have salespeople answer questions from customers who need help buying expensive items such as video players and cameras.

### STICKING TO SERVICE

Delia's Inc., a New York-based catalog company that sells clothing and accessories to teen-age girls, plans to implement Acuity Corp.'s chat-based service using WebCenter Express, first on its help page, then in its shopping cart and checkout areas.

"We do have a slight concern," said Delia's Senior Vice President Alex Navarro, because teen-agers are "notorious for spending insane amounts of time in chat rooms." But he said he thinks that can be managed by making sure communications stick to service and product questions and don't continue to "entertainment."

The technology will be introduced after the holidays, Navarro said.

BrainPlay.com Inc., a Denver-based company that runs an online store for children, decided to outsource its test of online chat to newcomer PeopleSupport Inc. in Los Angeles. "For this to work, it has to be a 24-by-7 operation," CEO Srikant Srinivasan said. "We're not up to having a 24-by-7 operation" in-house.

Geoffrey Bock, an analyst at Patricia Seybold Group in Boston, said companies can boost efficiency by using customer chat questions to improve their Web sites. □

## Sun license model

CONTINUED FROM PAGE 41

Some clean-room vendors — such as Insignia Solutions PLC and Connectix Inc. — see the licensing model as an opportunity to get their products to market quicker because they will use some of Sun's technology rather than write it all themselves. They'll also be able to brand their products with the Java name because they'll now have access to Sun's Java compatibility test suites. "Hopefully, it will bring a lot more consistency to the Java market in general," said Ron Workman, a marketing vice president at Insignia, which makes virtual machines to interpret Java code in embedded devices such as car navigation systems, cell phones and printers.

Cost and intellectual property rights (vendors formerly had to return any code improvements they made to Sun) discouraged Insignia from becoming a Java licensee in the past.

"If the royalty is reasonable, most small companies have no reason to build unique virtual machines," said GemStone CEO Bryan Grummon. That will help his company. The more virtual machines there are, the more work GemStone has to do to make its products work with all of them, he said.

But cost, apparently, will continue to keep HP's embedded division from using Community Source License. "For us, it would be impossibly burdensome, because the tax we [would have to] pay Sun is greater than the price we charge for our product, the Chai virtual machine," Bell said.

Shekar Mantha, president of Mantha Software Inc., a clean-room Java vendor that's mulling Sun's new license, said he un-

derstands both Sun's and HP's perspectives. For expensive medical devices, royalty fees might not be an issue. But for companies that sell millions of Internet appliances that each cost \$10, royalties in the \$1 to \$2 range would be unaffordable, Mantha said.

"Suppose I'm making a personal digital assistant. Say I put a \$1 part in that PDA. The cost for that will be \$5 by the time it goes through production, testing, wholesale, retail and shelf life. For every dollar I spend at the design stage, the customer will pay \$5," Mantha said.

If, in the end, companies such as HP continue to go their

### Sun's new Community Source License model:

► Lets vendors use and modify source code for commercial product development without any up-front fee

► Eliminates the requirement that vendors return to Sun any code improvements they've made

► Lets companies share compatible, modified source code without charge and without Sun intervention

► Allows Java licensees to package for resale Sun's Java class libraries with virtual machines from other licensees

own way, customers could wind up with differing versions of Java that might not work with each other.

But in the corporate development world, Community Source License isn't expected to make a significant impact. Some developers said source code might help them better understand

the inner workings of Java and fix bugs. But compatibility issues loom. "If we make changes to the underlying source code, and then [Sun] makes an upgrade and we want that upgrade, now what do we do?" said Douglas Gardner, a vice president at J. P. Morgan & Co. in New York. □

## Books, music, auctions top destinations

CONTINUED FROM PAGE 41

surfers spending a whopping 61 minutes per week at such sites; EBay Inc. was the top destination.

Next came computer products, with 11.8%; that category leader was *Beyond.com*. "Specialty" sites followed with 8.7%, with *Blue Mountain Arts* topping the field. Toys ranked seventh, at 5.5%, with *EToys Inc.* the top draw.

■ A rather ill-timed technology glitch forced Egift to suspend its site-search capabilities last week.

A company spokesman was still checking into why the software needed to be repaired. (Cybershop International Inc., Jersey City, N.J., [www.egift.com](http://www.egift.com)).

■ The Microsoft Network has launched a holiday shopping guide, including "great gifts under \$50" — which is further broken down into ideas for \$10

and under, \$11 to 20, \$21 to \$30 and \$31 to \$50.

Among Microsoft's suggestions were: The 20th Century Children's Book Treasury (\$28), a build-your-own customized Christmas Holiday CD (\$9.99) and a pound of Godiva chocolates (\$35). (Microsoft Network, Microsoft Corp., <http://plaza.msn.com/msnlink/giftsunder50.asp>).

■ For investors who want to check their portfolios and then hunt for holiday gifts, online broker ETrade Group Inc. has opened a shopping center at its site.

ETrade features links to sellers of computers, music, electronics and other goods (ETrade Group Inc., Palo Alto, Calif., [www.etrade.com](http://www.etrade.com)).

■ Reel.com has unveiled a "five-point guarantee" that includes a pledge to match any VHS, laser

disc or digital video disc price on the Web.

The company says if a Reel.com customer finds a lower price within seven days of purchase, it will refund the difference.

The movie seller also has instituted a 30-day, unconditional return policy, as well as a vow to find any movie available elsewhere that's not in the company's catalog. (Reel.com Inc., Emeryville, Calif., [www.reel.com](http://www.reel.com)).

■ *Outletmall.com* said business continues to build, as Friday, Dec. 11 saw online sales exceed the entire previous week's. "We've already tripled our site capacity, and it looks like that may not have been enough," site general manager Anne Marie said in a statement last week. (Internet Fashion Mall LLC, New York, [www.Outletmall.com](http://www.Outletmall.com)). □



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FACT

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FACT

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All these people connected via Windows NT servers also need access to the detailed information that resides on the more powerful systems that are the core components of a major enterprise (like, say, an IBM RS/6000 SP UNIX®

server capable of processing millions of transactions a second). In such a world, the ability to quickly and seamlessly integrate departmental Windows NT servers into your larger IT infrastructure is critical.

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This is what e-business is all about — not just building powerful servers for departmental use (and make no mistake, the Netfinity 5500 M10 can handle everything from huge e-mail networks to 24/7 Web commerce), but also providing tools to integrate and manage those servers as part of a much larger network. This helps you control costs and keep your network up and running.

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AND A STACK OF  
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WEB ENTREPRENEUR.



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That's a very affordable server — but not a stripped one. Like all Netfinity servers, the Netfinity 3000 comes standard with Lotus® Domino™ or Lotus Domino Intranet Starter Pack,<sup>™</sup> not to mention Netfinity Manager software.

This makes it easy and inexpensive to put your business on the Web, allowing millions of customers around the world to reach you. So you can grow from a very small business (say, for example, one pet store) to a very large one (say, the world leader in designer dog chow sales). As your business grows, you'll appreciate the

virtues of the systems management software that makes it vastly easier to keep your network up, running and generating more business. Nothing wrong with that.


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Of course, the value, quality and reliability of the Netfinity 3000 server is such that a whole bunch of not-so-small businesses will choose them by the dozens for things like print spooling and file management. Not the most glamorous tasks, but the day-in, day-out, got-to-be-dependable side of e-business.

If you'd like to know more about the full range of IBM Netfinity servers, financing arrangements and server options — from supplemental storage to fiberoptic connections — bookmark [www.ibm.com/netfinity](http://www.ibm.com/netfinity).

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\*Netfinity 7000 M10 performance, configured with four Intel processors and running Microsoft Windows NT, compared to next best competitor results on SPECweb96 benchmark as of July 17, 1998. Server configuration and test environment may vary. Estimated reseller price to end users for model B660RU (Netfinity 7000 M10) B661RY (Netfinity 5500 M10) 847616U (Netfinity 3000). All include IBM 4.5GB hard disk drive. Certain features described are available for an additional charge. Network operating system not included. Actual reseller prices may vary. MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. For terms and conditions or copies of IBM's standard Limited Warranty, call 1 800 772-2227 in the U.S. Limited Warranty Service in those countries where this product is sold by IBM or IBM Business Partners (registration required). IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel, the Intel Inside logo and Pentium are registered trademarks and Pentium II Xeon is a trademark of Intel Corporation. Other company, product and service names may be trademarks or registered trademarks of others. © 1998 IBM Corp. All rights reserved.

FACT



# The Enterprise Network

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## Briefs

Projected worldwide ATM service revenues



Source: Insight Research Corp., Parsippany, N.J.

### DSL routers ship

Cisco Systems Inc. in San Jose, Calif., has announced the Cisco 1400 Series, a line of digital subscriber line routers designed for small and midsize businesses and branch offices. The 1401 features an Ethernet and 25M bit/sec. Asynchronous Transfer Mode (ATM) interface for connection to ATM wide-area networks. The Cisco 1401 is shipping. It costs \$1,395.

### Customer support tool

Kana Communications Inc. in Palo Alto, Calif., last week released the latest version of its Customer Messaging System (CMS), a software suite that lets companies more easily handle and respond to customer E-mail and access data. New in Version 3.0 are Kana Direct, an outbound targeted marketing program; Kana Classify, a message classification application; and Kana Link, integration software. CMS 3.0 has a browser-based interface and advanced administration tools. Pricing starts at \$39,500.

### Norwest's CIS choice

Des Moines, Iowa-based Norwest Financial Information Services Group Inc., the services arm of Norwest Financial Inc., said it will use Electronic Document Warehouse software from Mobius Management Systems Inc. in Rye, N.Y., as the foundation for its companywide customer information system. The system will let users access data stored on multiple computing platforms at various sites.

### ANTISPAM SUMMIT

## Groups eye model for E-mail ads

By Roberta Fusaro

LIKE A FOREIGN diplomatic mission, a recent summit meeting between direct marketers and the antispam community produced "cautious optimism" and some progress toward an acceptable business model for E-mail advertising.

Representatives from the Direct Marketing Association (DMA) and antispam advocates met formally in Washington to identify areas of agreement regarding unsolicited E-mail advertising, known as spam.

In a significant concession, the DMA agreed to acknowledge opt-in marketing as the most successful targeting method for online businesses. Opt-in means a consumer has registered at a company's Web site to indicate he's interested in getting mail from that company.

The DMA until now has favored the opt-out model, which one marketer described as the "spam first, ask questions later" approach. Rosalind Resnick, president of NetCreations Inc.

E-mail ads, page 48

## IT pros tell what they really, really want



Millipore's Ram Prabhu

Wants ATM wide-area service to cost the same as frame-relay

## E-mail rollout halted

► Division lobbies to bar Exchange, keep Notes

By Roberta Fusaro

WHEN ITS German parent company decreed that powder manufacturer Niro Inc. fall in with its other divisions and use Microsoft Exchange, Niro said "Thanks, but no thanks."

Niro, which makes the equipment used to produce the powders and liquids in items such as soup, aspirin and plastics, committed to a Lotus Notes/Domino platform before German parent company GEA AG decided that Exchange would be the messaging standard across its nine divisions worldwide.

Niro headquarters in Columbia, Md., uses Notes databases and Notes-based applications to track the sometimes lengthy sales and procedural information involved in selling its processing equipment to food and drug companies in the U.S. and Canada, said Morton Petersen, Niro's information technology manager.

In the course of telling its Bochum, Germany-based parent it didn't want to convert to Exchange, Niro made the case for Notes as a better platform for collaboration. And now GEA has put a hold on its Exchange rollout and is looking at what Niro has done with Notes, Petersen said.

GEA had already invested in and rolled out about 5,000

Exchange seats among 10,000 to 15,000 employees in various divisions worldwide. When it saw what Niro was doing, GEA realized it wouldn't be able to easily recreate and deploy the Notes workflow applications on the Exchange server, Petersen said.

"You can't compare the two [products]," he said.

Rollout, page 48



"Notes is a true groupware tool."  
— Morton Petersen,  
Niro's IT manager

## SGI supports integration freeware

By Jaikumar Vijayan

Users looking to tie together their Unix and Windows NT boxes are getting a lot of help from system vendors these days.

Silicon Graphics Inc., for instance, recently announced that it's integrating support for Samba 2.0 integration freeware into its Irix operating system to help users access and share data between Unix and NT systems.

The move will allow Windows file and print services to run natively on top of SGI's Irix operating system.

SGI is the latest in a growing list of hardware vendors trying to offer users new ways to integrate systems that run Unix and NT. Others include

SGI supports, page 48

► Wish lists run gamut

By Bob Wallace

ALTHOUGH THEY probably won't be sitting on Santa's lap at the local mall, information technology managers do have wish lists of networking items they wouldn't mind this holiday season.

But there's no networking equivalent of the wildly popular Furby toy. Wish-list requests ranged from Gigabit Ethernet adapter cards for better server performance to lower-priced

international Asynchronous Transfer Mode (ATM) services for added bandwidth.

Sean Gilbert, manager of information systems at Card-service International in Agoura Hills, Calif., would like another Hewlett-Packard Co. Digital Sender 90100C to help further reduce fax traffic. The device connects to an Ethernet LAN, scans in documents and sends them to specified E-mail addresses as an attachment. "We have one already and are very pleased," he said.

Wish lists, page 48



# Sendmail targets corporate market

By Roberta Fusaro

ABOUT 70% of all Internet E-mail is routed using sendmail — ubiquitous-but-complex message-routing freeware. But the code still was too complex for corporate users to handle without a reasonably sophisticated knowledge of Unix.

So Emeryville, Calif.-based Sendmail Inc. built a graphical user interface on top of the core open-source code, adding setup wizards, point-and-click management and configuration capabilities. The company recently announced its first commercial products — Sendmail Pro and Sendmail for Windows NT — targeted at large companies and Internet service providers. Both will ship next month.

These commercial products have an advantage over the open-source code in two areas: ease of use and support, said beta tester Randall Winchester. He coordinates the campus Unix program at the University of Maryland in College Park.

"It's not as relevant at the university, but for the corporate world you can get and pay for support for the product," Winchester said. "That's extremely important for commercial sites. When the code is supported by only [the Internet] community,

## E-mail ads

**CONTINUED FROM PAGE 47** in New York, an opt-in-based E-mail list broker and manager, said she was delighted that the DMA supports the opt-in model, but noted that the marketing association stopped short of mandating that model to its membership.

Response to the summit from the antispam community has been cautiously optimistic, said Ray Everett-Church, co-founder and counsel for the spam-fighting Coalition Against Unsolicited Commercial E-Mail. "The DMA still has to win the confidence of the Internet community, but I think they realize that," Everett-Church said. The fact that the meeting took place at all makes it a big deal for both sides, he said.

The sides agreed to support legislation that prohibits forged E-mail headers, and to create a nonprofit, global opt-out list. □

[businesses] can't use it."

Sendmail Pro's Web-based graphical user interface makes the management of sendmail configuration a lot easier, he added. Instead of having to understand Unix like a pro, dialog boxes offering help pop up to guide users through the configuration process.

"With the Sendmail Pro beta, I see that I can easily get someone else trained and can start delegating configuration tasks," Winchester said.

Meanwhile, IBM last week released open-source code for Secure Mailer on the Internet. The software, which sends and stores E-mail messages, runs on IBM's AIX Unix and was designed to replace sendmail.

Other competitors to Sendmail's products include messaging platforms from Software.com, Netscape Communications Corp. and Sun Microsystems Inc., as well as the freeware version of sendmail.

According to researchers, 84

companies in the Fortune 100 use sendmail at their firewalls. But configuring and supporting the freeware can be a headache.

The Netscape and Sun products offer more, such as capabilities for collaborative applications and a rich directory, said David Ferris, president of messaging consultancy at Ferris Research Inc. in San Francisco.

"One main reason Internet service providers like the sendmail code is because it's free. So I wonder how much they'll like it if it's not free?" said Eric Arnum, managing editor of the "Electronic Mail & Messaging Systems" newsletter in Forest Hills, N.Y.

Chevron Co. in San Ramon, Calif., isn't looking for a generalized E-mail platform for the company's 30,000 Microsoft Exchange users, said Marion Weiler, the company's senior messaging technologist. "The Sendmail products might work for a particular application or as something that interacts between the Chevron messaging structure and Internet," but the company already has similar technology in place, he said.

Pricing for Sendmail Pro starts at \$1,298. Pricing for the NT version starts at \$498 for 10 users or \$998 for 50 users. □

## Rollout halted

**CONTINUED FROM PAGE 47**

He said Exchange is "as good as anything out there for messaging, but Notes is a true groupware tool," offering the company workflow and document management capabilities.

Niro stores its manuals in Notes databases so its divisions can share information, Petersen said. The company recently received approval from the Food & Drug Administration to manufacture pharmaceuticals for third parties; Petersen cites the company's use of Notes — and its easy access to information — as one reason Niro received FDA certification after only one visit from the agency.

Niro also tracks sales documents and customer information via Notes databases; it generates order confirmations, work orders, invoices and shipping documents using Notes-based applications. The company is running Notes 4.6.1.

The IS director at GEA's home office couldn't be reached for comment regarding the status of the Exchange rollout. A Microsoft spokesperson was checking the status of the Ex-

change account at press time.

A GEA spokeswoman said the company uses Exchange at the headquarters in Bochum and that she couldn't comment on which of GEA's 150 companies in more than 50 countries use Exchange. "The decisions about which software is used is mostly decentralized. It's up to the subsidiaries," she said.

Niro has one Domino server in Maryland that serves about 500 people there, and includes SMTP and E-mail agents. Niro has about 4,000 Notes seats installed and will standardize on the groupware across its three offices. □

## Wish list

**CONTINUED FROM PAGE 47**

Gilbert would also like to speed up beyond 100M bit/sec. Fast Ethernet, the high-end servers that run the company's imaging applications. He's hoping Santa will leave him some Gigabit Ethernet adapter cards.

Retailers would like to see open standards for tying wireless devices to networks, said Don Gilbert, senior vice president at the National Retail Federation, a Washington-based industry association. Today, IT managers must use proprietary and expensive interfaces. "We'd love to see open standards that would allow retailers to tie wireless scanners to their wired Ethernet LANs," he said.

Another user said, "The best Christmas present would be for it to be past the leap year," said Ken Cieszynski, staff engineer at United Air Lines Inc. in Elk Grove Village, Ill. "We've got things under control, but I can't wait until it's over." United is checking to see if devices such as network management systems are year 2000-compliant.

Ram Prabhu would consider it a fantastic Christmas if carriers around the globe started charging the same rate for ATM wide-area services as they do for frame relay, which provides less bandwidth.

Prabhu, director of corporate communications at filter maker Millipore Corp. in Bedford, Mass., acknowledges that's unlikely to happen. "But if the price was the same, I'd buy worldwide ATM service tomorrow," he said. Millipore uses a global frame-relay network linking sites in 30 countries. □

## SGI supports integration freeware

**CONTINUED FROM PAGE 47**

Sun Microsystems Inc.'s recently announced Project Cascade technology and Sequent Computer Systems Inc.'s hybrid Unix/NT hardware.

Such vendor efforts are crucial at a time when a growing number of Unix shops are figuring out ways to make the most of their Unix hardware while moving new applications to NT, said Dan Kusnetzky, an analyst at Framingham, Mass.-based International Data Corp., a research firm and sister company to *Computerworld*.

Tapping a freeware product to provide interoperability "appears to be a fairly clever way of addressing user needs to integrate Windows desktops with SGI's Unix servers," Kusnetzky said. Because Samba is a freeware product, all users have to pay SGI for its support and documentation, he said.

### OPTIONS

The latest move gives SGI users another alternative when integrating the two operating environments. The company already resells a technology called Total Access Solution (TAS) from

### SAMBA ON SGI'S UNIX SERVERS

**What it is:** Freeware for Unix/Windows interoperability.

**What it does:** Helps users access and share Unix files from Windows environments.

**What SGI has done with Samba:** Optimized it to run on SGI's Unix operating system and server hardware. SGI also will provide documentation and support.

**Pricing:** \$300 for software and documentation, \$1,500 annually for server support.

**Availability:** Now.

Syntax, Inc., which provides similar capabilities.

But instead of the per-client license charge that users had to pay for TAS, SGI will charge a flat \$300 for Samba software and documentation and \$1,500 annually for support, according to SGI.

Samba is proving useful at 3M Corp. Several of the company's core engineering data and applications — such as finite element analysis — still run on huge SGI and Hewlett-Packard Co. Unix servers.

But 3M is in the midst of cutting over several of its lower-end engineering and design

applications to NT.

Files too big to be hosted on NT systems now can be directly accessed from Unix servers via any NT client via Samba, said Pete Bye, a lead computer-aided design and manufacturing analyst at 3M's engineering information systems group in St. Paul, Minn.

"We started about a year ago and tried a number of commercial applications before choosing Samba," Bye said. "It's proved to be a good choice for us — it runs in the public domain, it's fast, it's cheap, and now SGI has tuned it for their servers." □



# Software

Databases • Development • Operating Systems

## Briefs

### International payroll

PeopleSoft Inc. last week announced plans to package international payroll software developed by IBM with its PeopleSoft 7.5 applications. The deal follows a recent decision to delay until 2000 a PeopleSoft 8 release that is supposed to add European payroll support [CW, Nov. 16]. PeopleSoft, in Pleasanton, Calif., said the combination of PeopleSoft 7.5 and IBM's software will initially be released in the U.K. and France by mid-1999.

### NT terminal access

The Santa Cruz Operation Inc. is expanding the capabilities of its Tarantella Web-enabling software with a new version that will help users access Windows NT Terminal Server applications via any browser-enabled Windows client.

### Procurement upgrade

Atlanta-based Clarus Corp. this month released an upgrade of its online procurement software to a few initial users. General shipments are due by the end of March, Clarus officials said. E-Procurement Version 3.0 has a new interface and supports Microsoft Corp.'s electronic-commerce routing software.

### Reasons to smile

Which criteria were critical to the success of your SAP R/3 software installation?

Project management skills	88%
Senior management support	59%
Training and rollout planning	43%
Managing organizational change	42%
Choosing and managing consultants	39%
Redesigning business processes	31%

Base: Interviews with 110 R/3 project managers or executive sponsors, mostly in North America and Europe; multiple responses allowed

Source: Benchmarking Partners Inc., Cambridge, Mass.

## Visa's database tested to extremes

► Testing tool let team prepare for holiday rush

By Nancy Dillon

PART OF MICHAEL MCGRAW's job is to see if he can break Visa's transaction authorization system. And thanks to the recent adoption of data duplication software, McGraw is more merciless than ever.

Every summer, McGraw and his test team rent a week's worth of space at a Maryland test center, configure a carbon copy of the Visa International Service Association's 2T-byte credit/debit database and then "beat the hell out of it" to see what the database can handle.

The process is called Visa's Holiday Stress Test. "From Thanksgiving through January, we expect to reach peaks of between 3,000 and 3,500 transactions per second," said McGraw, vice president of transaction

### DATABASE STORAGE

switching systems at San Francisco-based Visa. That traffic is almost double Visa's off-season business load. Not only did the July stress test verify that the system can handle the holiday blitz, but McGraw said it also showed that the database could support an unexpected torrent of up to 5,000 transactions per second — as long as Visa has enough lead time to roll in minor hardware additions.

The Visa test team was able to discover the system's outer limits in large part because of a storage-based data duplication tool from EMC Corp. in Hopkinton, Mass. The tool, called TimeFinder, has let the team run four times as many tests this year as in years past because it alleviated the need for off-line database restores.

Visa, page 50



Visa's Michael McGraw: "In the past, we used to have to run a test, stop and then take eight to 10 hours to restore [the database] from tape." Now, restoring the database's base version takes 15 minutes

## For most shops, Solaris upgrade is worthwhile

By Eric Hammond

WITH THE LATEST release of its Solaris operating system, Solaris 7, Sun Microsystems Inc. delivers another blow to the chin of Microsoft Corp. and its plans to dominate corporate systems.

Although the ship date of Microsoft's Windows NT 5.0 — now dubbed Windows 2000 — continues to slip, Sun is cranking up the performance level and easing the administration of Solaris so it can remain a powerhouse in technical and office environments.

The most popular version of Unix in many sectors, Solaris now offers several new capabilities for Internet and intranet use. And, acknowledging Microsoft's dominance on the desktop, Solaris 7 adds improved integration with NT and other clients.

The most significant feature of Solaris 7 is its 64-bit architecture, which will come in Solaris, page 50

### PRODUCT REVIEW

#### ► Solaris 7

#### SUN MICROSYSTEMS INC.

Mountain View, Calif.  
www.sun.com

**Price (As of Dec. 1):**  
Solaris Server: \$417  
Easy Access Server: \$357

#### Grades:

Installation/configuration	C
Performance	A
Device support	A
Network support	A
Security	B
Administration	C
System requirements	C
Documentation	C
Support policies	D
Technical support	A

## Sybase CEO discusses revamp

CEO John Chen is out to change the face of Sybase Inc. Since joining the database maker in July 1997 as president, he has been working on ways to pull the company out of its financial doldrums. "If we continue to get revenue just from an installed base... we've got problems," Chen says. He recently spoke with Computerworld senior writer Stewart Deck, addressing the following topics:

### On why Sybase recently restructured:

**CHEN:** In the past, we had just one sales force that had to learn and position 125 products. Because of this complexity, we gradually pushed our people into just selling databases and tool licenses. The restructuring brings accountability and some



Sybase's John Chen: "Partnerships are also important"

focus into some very strong growth businesses — Enterprise Solutions, Mobile and Embedded Systems, Business Intelligence and Internet Applications — and makes a couple of groups nimble enough to go after market share in some of those high-growth markets.

I have seen this model work before, and I have some experience doing it. It not only increases accountability, but increases the energy level in dealing with partners and increases

Sybase, page 51



## Eyeing the competition

### ► J. D. Edwards sets its sights on Unix and NT

Being a big fish in the relatively small pond of AS/400 applications isn't good enough anymore for J. D. Edwards & Co. The Denver-based software vendor also is competing for Unix and Windows NT users with the likes of SAP AG. Edward McVraney, chairman of J. D. Edwards, spoke this

month with Computerworld senior editor Craig Stedman about the challenges his company faces.

**CW: Are you shooting to jump over Oracle Corp. and PeopleSoft Inc. to become the No. 2 enterprise resource planning [ERP] vendor behind SAP?**

**McVRANEY:** I think that when we get to the year 2000, we've got to be No. 2. In any industry, there's only room for three serious players long term, and third is a very difficult position to be in.

**CW: How many customers now use your new OneWorld applica-**

tions on Unix or NT systems?

**McVRANEY:** There are 130 or so users live with OneWorld, and about 80 of them are non-AS/400. But we're just breaking into this market. And the competitors are much, much tougher than they are on the AS/400.

**CW: Your marketing has taken a lot of criticism from ERP analysts. Is that a fair knock?**

**McVRANEY:** That's not a knock, it's the truth. That's why we're doing things like this [a press conference at Comdex/Enterprise in New York]. And I think that in 1999, we'll outgrow all of our competitors in software license revenues.

**CW: You recently gave up the CEO job at J. D. Edwards. Why do that at such a crucial time?**

**McVRANEY:** I don't think I'm the guy to lead the company forward. I'm a product guy, an engineer, a techie weanie. And I'm tired and exhausted. The last five years have been a killer for us. □



J. D. Edwards' Edward McVraney: "The last five years have been a killer for us"

## D&B aims to help in-house marketers

By Stewart Deck

FOR SOME COMPANIES, the pendulum swings back and forth between outsourcing all marketing functions to an outside expert and keeping them in-house to control customer data.

So last week's software release from Dun & Bradstreet Inc. in Murray Hill, N.J., was designed to be a bridge between the two approaches.

The new edition of the database marketing software, Market Spectrum 3.1, provides a current, nationwide database of

company addresses, credit information and other business data. That data can be compared with a user's own prospects database for updating, cleansing and marketing analysis.

The new release, which will be available in January and starts at \$2,400, also features a module for managing marketing campaigns. The software bridges the two approaches because it bundles business data in the database and then lets users run their own analysis.

"Dun & Bradstreet is one of the first to understand this

trend [away from complete outsourcing] and develop a kind of hybrid shared marketing role between themselves and their customers," said Tim Harmon, an analyst at Stamford, Conn.-based Meta Group Inc.

David Shadick, manager of marketing information systems at Union Camp Corp., a \$4 billion paper and packaging company in Wayne, N.J., said the previous edition of Market Spectrum helped pinpoint where Union Camp's highest profits come from and how to better manage its marketing mix. □

## Visa database

CONTINUED FROM PAGE 49

TimeFinder, which works only with EMC Symmetrix arrays, can create independently addressable copies of storage volumes without disturbing normal production activities. The copies can be used for testing applications, running backups or loading a data warehouse.

"Every test scenario requires us to reset the database back to its starting state," McGraw said. "In the past, we used to have to run a test, stop and then take eight to 10 hours to restore [the database] from tape." With TimeFinder, McGraw said, his

team could use online copies of the database to run tests and then reset the database's base version in 15 minutes.

Similar products include Transparent Data Migration Facility from Amdahl Corp. in Sunnyvale, Calif., and RediCopy from XIOTech Corp. in Eden Prairie, Minn. Announced last week, RediCopy enables a source volume to be copied to a target volume while the source remains online and accessible. The software runs on XIOTech disk arrays. RediCopy costs \$16,000 for an eight-server configuration. TimeFinder starts at \$72,000 for one Symmetrix system and up to 32 connected servers.

Lyle Myers, systems coordina-

tor at Nahan Printing in St. Cloud, Minn., said RediCopy let him upgrade his XIOTech RAID array from a 16-drive system to a 32-drive system with no production downtime. The data on the older drives was targeted to a RAID configuration that striped all 32. "We would have probably been looking at four to six hours of downtime without [RediCopy]," Myers said.

In an August report, Strategic Research Corp. in Santa Barbara, Calif., found that 63.7% of companies with mission-critical databases are performing some form of hot (or online) backups. That number should rise as database capacity grows and backup windows shrink, the report said. □

## Solaris

CONTINUED FROM PAGE 49

handy for the more than 1 million Sun UltraSPARC machines already in the field. That should provide users with increased memory and disk addressing, the ability to crunch bigger numbers and a dramatic improvement in performance. But the current lack of 64-bit applications prevented us from testing the performance improvements.

Solaris 7 also offers easier administration through several tools included with the operating system. Sun further refines the bundles first released with the previous operating system release, Solaris 2.6.

We tested the Easy Access Server version of Solaris 7 on a Sun Ultra 60 machine with dual 300-MHz UltraSPARC II processors and 256M bytes of RAM. A fresh install of the operating systems looks much like the installation of the previous few versions of Solaris. The installer prompts for network information and then lets you configure the file systems on the new box.

File system is the only configuration that might prove confusing to new Solaris users, and I hit glitches with Solaris 7's auto-layout features even in the Web Start browser-based install. But with a bit of reading about the purpose of the various file systems, you should be able to configure them to meet your needs.

Users shouldn't run into the binary compatibility issues common in the transition from SunOS4 to Solaris 2, which occurred some years ago. That's why Sun skipped several iterations with Solaris 7, jumping from Solaris 2.6 to the current version.

### CAPABILITIES

Easy Access Server offers several nifty tools for building intranets, including a Web server, a mail server, Lightweight Directory Access Protocol directory services and several administration tools. The only noticeable downside is that, with the exception of Java, Easy Access Server lacks basic application development tools such as Perl.

Solaris' administrative tools represent a big step forward for Sun, though there's still room for improvement. The Solaris Management Console offers a centralized collection of various Solaris administrative tools. From there, you might find

yourself running a shell script, an X Window System application or a browser-based tool, depending on the task you're trying to perform. Remote administration is possible with Management Console, but you will need an X Window server on the remote machine to take full advantage of the tool.

Also included is the latest release of TotalNet Advanced Server, which makes integration between Unix and non-Unix networks much easier because administrators don't have to choose Unix's Network File System. TotalNet's browser-based administration was easy and well-documented.

Though Solaris 2.6 also supports clients that run Windows, NetWare and Mac OS, Sun is emphasizing Solaris 7's ability to do so. In addition, Sun has outlined a path toward even tighter NT integration, hinting that Solaris servers soon will be able to serve as NT Primary Domain Controllers.

### SHOULD YOU UPGRADE?

Is Solaris 7 right for you? The answer is yes if yours is a long-time Sun shop with no plans to leave the platform. Solaris 7 will let you unleash the full potential of your 64-bit SPARC hardware. Plus, you will like the easier management and the ability to network with machines running NT.

If you have a mixed environment, Solaris 7 offers easier administration and better integration. Plus, the path through Solaris 8 and 9 will bring more support for mixed environments, including for Microsoft's Active Directory and better integration with NT domains.

If yours is an NT shop and you're finding that the increased demands of the Internet are swamping your operating system, you will find Solaris 7 to be a highly scalable high-performance tool that integrates painlessly with your existing systems.

If your site runs on older Sun hardware that can't take advantage of the 64-bit architecture, or if you don't care about the administrative tools and Windows NT compatibility, there's really no reason to upgrade to Solaris 7.

Solaris has always had a reputation as a robust, high-performance operating system for the enterprise. That hasn't changed with Solaris 7. □

Hammond is a Denver-based freelance writer. His E-mail address is ehammond@earthlink.net.



# Sybase

CONTINUED FROM PAGE 49

the penetrations into those markets.

## On the strength of Oracle Corp.:

**CHEN:** The real competition for applications vendors like SAP and PeopleSoft is Oracle, so I think it's unavoidable that applications companies will eventually have to fight with them. We're working on developing more partnerships with these application vendors — so that when there is a fight, I'll be there with my strengths and established relationships.

We also plan to make headway three ways: 1) by focusing on three vertical markets — finance, telecommunications and health care — to maximize our chances of success; 2) by expanding our enterprise support offerings; and 3) by continuing to develop partnerships.

## On the ongoing push into offering services:

**CHEN:** We've needed to raise the profile of our services division, so about a quarter ago, we created a new division, called Global Services, to bring awareness to our services. Next year, my plan is to grow that division and perhaps boost it through an acquisition.

## On PowerBuilder vs. Java:

**CHEN:** The way to take care of defections away from PowerBuilder toward Java is to provide the best Java development tools and a deployment environment. . . . So for those 4GL, client/server users, we're going to move them into a thin-client, Web-enabled mode. We've just announced the beta for PowerBuilder 7.0, which has lots of facilities for developing reusable objects for thin clients as well as facilities to move reusable PowerBuilder objects onto the Web. It will be [generally available] in the first quarter in 1999.

## On Sybase's recently formed Mobile and Embedded division:


**CHEN:** One of the key steps to being successful is to get more applications. Today, we have 350 [mobile] applications, and we will continue to drive that hard. That's the way to continue leading. We also have to focus on creating domain expertise in verticals and have each division go after these verticals in a surrounding strategy.

Partnerships are also important. We're working with [companies such as] Nokia [Corp.], Motorola [Inc.], Psion [PLC], Ericsson [AB], BellSouth [Corp.] We don't care all that much if people know if there's Sybase product embedded, but we want the application standard to be on the Sybase small-footprint database.

## On Sybase's financial outlook:

**CHEN:** I made a promise to [Wall

Street] that making money is important to us, and no one argued with us. I like to make money by growing the company. Whatever I need to do to get there, I will. But I want to make sure we have the right revenue. If you look at our revenues over the past couple of years, it's been the enterprise and repeat sale. If we continue to get revenue just from an installed base on databases — and not new stuff — we've got problems. □



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## Gold Miner

Gary Anthes, Senior Editor, Special Reports

NEW

PRODUCT

**BACKWEB TECHNOLOGIES INC.** has announced BackWeb Sales Accelerator, a suite of software modules for improved sales force intelligence.

According to the San Jose, Calif., company, the software's Strategic Publishing Manager module lets users send high-priority, instant pop-up messages. The Automated Marketing Encyclopedia lets users subscribe to documents such as price lists and receive automatic updates. The Market Intelligence Manager module continuously gathers competitive data from any Internet or intranet location. Pricing is \$480 per user.

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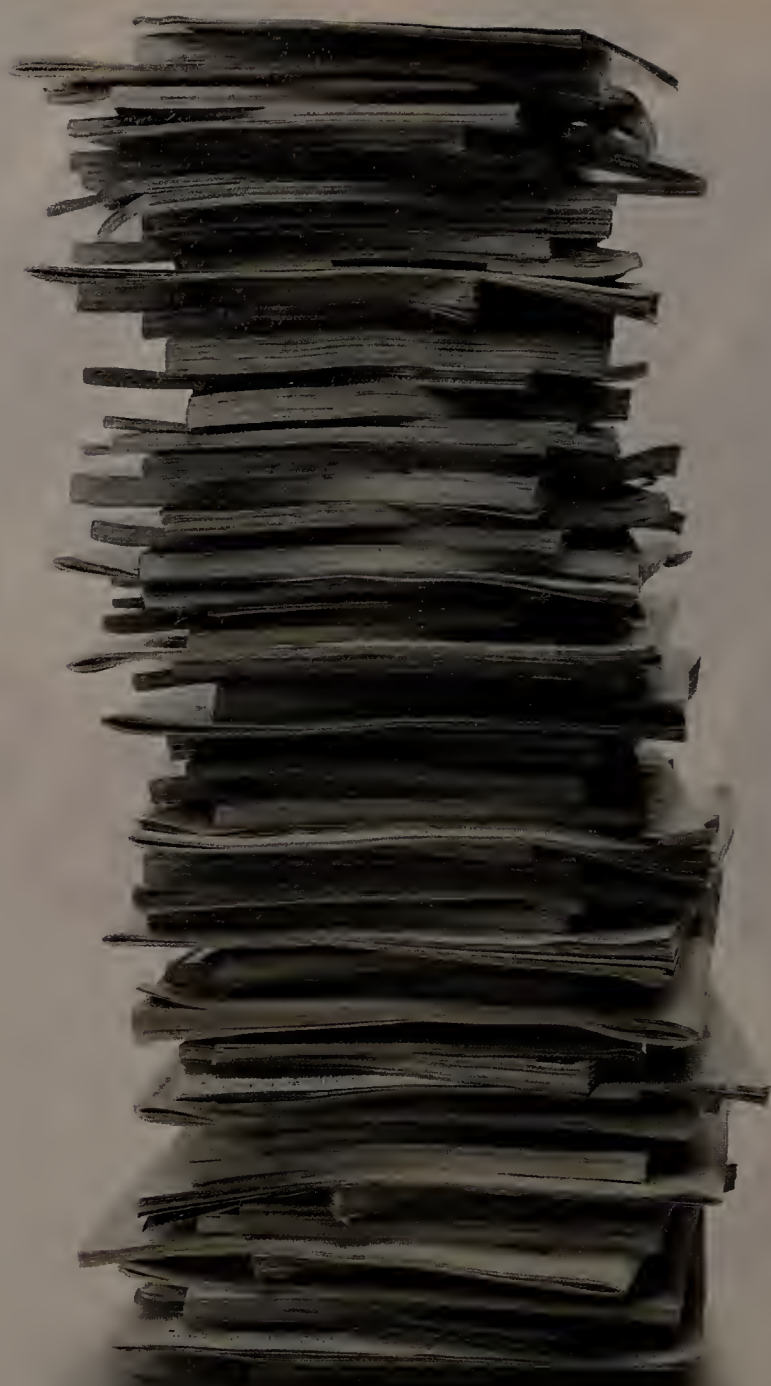
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# Servers & PCs

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## Briefs

### PICK AND CHOOSE

What criteria do you use to determine which PCs to buy?

Price	60%
Support	44%
Quality	30%
Standard configuration	26%
Features and performance	26%
Reliability	22%

Base: Survey of 50 Fortune 1,000 companies; multiple responses allowed

Source: Forrester Research Inc., Cambridge, Mass.

### Win 98, Mac OS fixes

Microsoft Corp. and Apple Computer Inc. have released bug fixes for their popular operating systems. Microsoft has posted a 1.2M-byte fix for several year 2000 bugs in Windows 98 at <http://windowsupdate.microsoft.com> and Apple has posted a 3M-byte patch for Mac OS 8.5 that fixes several bugs, including a driver flaw that can lead to lost data. The patch is at [www.apple.com/support/](http://www.apple.com/support/). The companies also offer the patches on CD. Microsoft's is free. Due next month, Apple's will sell for \$10.

### Dell notebook options

Dell Computer Corp. is adding memory, removable storage and DVD-ROM drives to its Latitude corporate notebooks. Using a 128M-byte small outline, dual inline memory module (SODIMM), Latitude CPi model users will be able to configure computers with up to 256M bytes of RAM. A 128M-byte SODIMM costs \$499. The Imation Corp. LS-120 SuperDisk modular bay option also is available for Latitude CP and CPi models, offering 120M bytes of removable storage compatible with floppy disks. It costs \$199 and comes with one 120M-byte disk. A removable 6.4G-byte hard drive costs \$499. The DVD-ROM drive is due by March. Pricing isn't yet set.

## Juggling devices just got easier

### ► Traveling project manager finds help in tools

By Matt Hamblen

ARMED WITH A laptop, cellular phone and handheld computer, Will Glass-Husain hops from city to city managing software training projects and the developers assigned to them.

He spends plenty of time juggling the three devices like a circus performer spinning plates on sticks. When he's not in one of his two offices, he must keep several clients updated at once on various projects divided into as many as 30 parts.

"Keeping track of the pieces of a project with many steps and two developers is a full-time job," said Glass-Husain, senior consultant at Powersim in Herndon, Va.

To help simplify his life, Glass-Husain added Microsoft Corp. Project software to his laptop in September to track the status of projects. In November, he began testing a package that extends Project to his 3Com Corp. PalmPilot Pro.

That extension, MobileManager from start-up USDev Inc. in Clifton, Va., allows Glass-Husain to use his Palm device in a meeting with a client to quickly see how much of the project is complete. He needs the agility and flexibility of the handheld to bolster his point when it wouldn't make sense to boot up a laptop.



**Will Glass-Husain**  
Uses three devices to track projects while on the road

"Projects get complicated when they grow in size. You need to tell clients way ahead of time when it looks like a \$100,000 project is going to grow in size," he explained. "You can't show up one day and say, 'I'm out of money.'"

In one recent example, Glass-Husain was talking with a developer on his cellular phone; he stopped his car to check MobileManager for the status of that developer's latest portion of the project. Glass-Husain said he likes the simplicity of MobileManager but added that he wishes he could use it more fully to write changes to Microsoft

Project from the PalmPilot when he synchronizes with his laptop. "You can add work tracks to a project from MobileManager, but not with as much detail as with Project," he noted.

USDev officials said a manager who wants to do a lot of updating will do best with a desktop PC. But the major purpose of MobileManager is to allow greater freedom of movement

for project managers within offices and among job sites. They can "manage by moving around," said Ward Hitt, CEO of USDev. MobileManager sells for \$50 per user. Currently, it runs only on the PalmPilot Pro, but soon it will be ready for Windows CE-based devices.

Another vendor in this space is Casio Soft Inc., which sells

Juggling, page 56

## JavaStation finally lands pilot customer

### ► Successful test would result in 25K-unit sale

By April Jacobs

IT WAS THE FIRST to step up to the plate in network computing and the last to deliver, but Sun Microsystems Inc. is banking on 1999 being the makeup year for its much-promoted JavaStation.

Sun delivered JavaStation in April — nearly a year late. After the initial hype subsided, Sun has seen little adoption. But a pilot project with one of the nation's largest food distribution

companies looks like a step in the right direction, observers said.

That pilot project, set to begin with Dallas-based AmeriServe Inc. early next month, could lead to an installation of more than 25,000 JavaStations at the restaurants of AmeriServe's customers, which include some of the country's largest food chains, including Burger King Corp., Taco Bell Corp. and KFC Corp.

If the pilot project is a success, AmeriServe will begin to roll out JavaStations to its customers, said Dennis Rees, vice president of marketing and information technology at AmeriServe.

"The AmeriServe deal is an example of the way [Sun] is planning to fix the problems they've been having with the JavaStation," said Eileen O'Brien, an analyst at Framingham, Mass.-based International

JavaStation, page 56

## Server sales up, revenue down

### ► Closeout Pentium bargains hurt revenue

By April Jacobs

RESEARCH RELEASED this month shows worldwide PC server shipments grew 22% in the third quarter over the same period last year, but revenue didn't keep pace because many sales were cut-rate deals on older, lower-end machines.

At the same time, there weren't enough machines with Intel's new Xeon chips to go around.

U.S. server revenue declined about 6.5%, to \$1.2 billion, in the third quarter of 1998 compared with the third quarter of

last year, according to research by International Data Corp. (IDC) in Framingham, Mass., a sister company to Computerworld. That revenue was on total U.S. shipments of 202,710.

The good news, as usual, is that as the top four vendors continue to wage a battle for enterprise market share, corporate buyers can push for better service and support — and lower prices, said Amir Ahari, an IDC analyst.

Steep competition isn't new to the PC server market, but there's new incentive for Compaq Computer Corp., Dell Computer Corp., IBM and Hewlett-Packard Co. to seek hegemony

Server sales, page 56

### Worldwide PC server market share, Q3 1998

Compaq/Digital	32%
Hewlett-Packard	15.2%
IBM	12.9%
Dell	11.5%

Total shipments: 551,000

### U.S. market share, Q3 1998

Compaq/Digital	32.3%
Dell	19.7%
Hewlett-Packard	16.5%
IBM	9.7%

Total shipments: 202,710

Source: International Data Corp., Framingham, Mass.



The AmeriServe pilot could yield an installation of more than 25,000 JavaStations



# Server sales up, revenue down

CONTINUED FROM PAGE 55

in corporate shops: the emerging use of Windows NT for transaction processing and database servers.

If more companies move to NT from Unix, that should help sustain PC server growth, according to John Dunkle, president of Workgroup Strategic Services Inc. in Portsmouth, N.H.

## RELYING ON PENTIUM PRO

Corporate users have been relying on Pentium Pro-based servers to fill that role up until now for the most part, but those machines are more expensive than Xeon-based machines —

and pack only half the punch. Pentium Pros cap out at 200 MHz, while Xeons start at 400 MHz. So far, there have been about 202,000 Xeon-based machines shipped since it debuted this summer, according to IDC. But those Pentium-class machines carried low price tickets, making profits much slimmer than they would have been on Xeon-based machines.

"The shortage of Xeons hampered growth at the high end, so the vendors sent out a last round of Pentiums," Ahari explained.

Meanwhile, Xeons carry a much better price/performance

tag than a Pentium Pro-class machine. The average Pentium Pro server costs about \$8,000 to \$10,000, while a Xeon costs

about \$5,000 to \$6,000.

Still, the vendors had reason to dump stock and cut prices even if it reduced short-term revenue, Dunkle said.

He said the conventional vendors have learned a lot from build-to-order brands such as Dell about the advantages of not

keeping inventory around.

Last year, Compaq and IBM learned hard lessons when overstocked inventories and last-minute channel-stuffing led to financial hardships. Compaq posted losses, while IBM failed to realize its goal of growing server market share. □

## JavaStation customer

CONTINUED FROM PAGE 55

Data Corp., a sister company to Computerworld. "The idea is . . . to come up with a vertical solution that's right for a business."

AmeriServe provides food for 37,000 restaurants in the U.S., Canada and Mexico. Only 14,000 of those use PCs to order food supplies in an automated way. The rest call in orders — an average of two to three times per week — at a cost to AmeriServe of \$3 to \$10 per call. Rees said a Web-based system would cost about 80% less to host.

## JAVA REWRITE

AmeriServe has rewritten its current ordering software in Java and plans to offer the new, browser-based application to customers as soon as March.

The browser-based application will let customers place orders, view any applicable special pricing information, track what they ordered in the past, use past orders as a suggested order

menu and confirm receipt of their orders.

The current PC-based system is costly, Rees said, not only because the hardware requires more maintenance than a network computer, but also because software updates and fixes must be done locally — something that's difficult to maintain in restaurants where technical expertise isn't a given.

"We can roll out incremental enhancements [to the software],

and everyone will have access overnight," Rees said, noting that timing is very important to restaurants in dealing with food items. Rees also said he expects the system to be more accurate than a telephone-based ordering system because people can immediately view what they have ordered and when it's scheduled for delivery.

James Potts, a restaurant industry analyst at Jefferies & Co. in Los Angeles, said he thinks the industry as a whole may be slow in catching on to a plan such as AmeriServe's, given its low-tech nature. That could give AmeriServe an edge, he said. □

## Juggling devices is easier

CONTINUED FROM PAGE 55

CSI Project software for \$80 to port Microsoft Project to Windows CE machines. MobileManager and CSI Project are in the early stages of this new market, said analyst Jill House at Framingham, Mass.-based International Data Corp., a sister company to Computerworld.

"This kind of software has the potential of making Microsoft Project more popular, the same way that Palm [computers] made personal information managers more popular,"

House said. Still, she added, she worries that with corporate IT departments, the appearance of MobileManager and similar software packages is likely to increase the complexity of managing the growing number of mobile devices used by workers.

"If you have somebody on staff with a Palm and Microsoft Project, this adds a third step," House said. "That's a lot of steps for companies that are adopting handhelds through the back door." □

## Palm III may be opening door to car theft

By Kathleen Ohlson

3COM CORP. is investigating the possibility that its Palm III handheld organizers are being used to break in to cars, the company said last week.

The same software that some consumers have added to their

Palms that enables the devices to be used as TV remote controls can also unlock doors of cars equipped with infrared locks, 3Com said.

"Car manufacturers have also been well aware of this risk for a long time," the company said in a statement. "The technology

that allows the Palm III organizer or a universal remote control to communicate with and learn from a television set is no different than the technology that allows a wireless key fob to communicate and learn from the infrared lock on an automobile."

3Com, in Santa Clara, Calif., said it knows of no instances of car thefts using a Palm III or other infrared-equipped products.

Last month, however, a sister company to Computerworld reported that it successfully copied a car key for an infrared lock using a Palm device.

In the test by PC World Denmark, it took 10 seconds to copy a key.

The vice president of marketing at 3Com Denmark told the magazine that the PalmPilot is able to open only older car locks; newer models require a notebook PC. □

## Sun VP: Lack of Java apps hurt JavaStation

Last April, Sun Microsystems Inc. launched JavaStation, a network computer running Java as its operating system. Although heralded as what a network computer should be, JavaStation hasn't caught on. Computerworld senior writer April Jacobs asked Steve Tirado, Sun's vice president of marketing for network computer systems, what the Palo Alto, Calif.-based company is doing to make a place for its network computer in the enterprise.

**CW: The JavaStation didn't really take off. What happened?**

**TIRADO:** The hype was dramatically assisted by the press, but I won't argue that [Oracle Corp. CEO] Larry Ellison and [Sun CEO] Scott McNealy didn't make a big deal out of it as well.

For those of us working on it, we knew there were two things that had to happen for this to be a success.

[First,] companies had to see that an Internet style of implementation of their network was the right direction to take using Web servers and browsers. Java is the way to write your applica-

tions and have them safely transported across the network.

There also has to be some critical mass of Java applications available, and that's the longest part of the uptake of the JavaStation.

**CW: Are you making headway?**

**TIRADO:** [In general,] companies have embraced the Internet style of technology as a way of distributing information efficiently.

But where we [are] succeeding [with Java Station in particular] is with customers who are doing custom applications.

It is specifically in these businesses, where there is a highly distributed infrastructure, that this makes sense.

**CW: Can you name some things Sun is going to do to turn the tide?**

**TIRADO:** One of the things we are doing is making a stronger push to communicate the fact that we have all the pieces you need to make this work. □



Sun Microsystems' Steve Tirado

**A "critical mass of Java applications" would help JavaStation succeed**

## Intel sets sights on low-end market

Intel Corp. is trying to recapture lost market share at the low end of the desktop PC market, sources in Taipei, Taiwan, told the IDC News Service, by accelerating release dates of its Celeron processors. By mid-1999 the chips could speed to 433 MHz from today's 333 MHz.

Intel early next month will debut the first Celeron chips in a new 370-pin socket packaging at speeds as high as 366 MHz, with a 400-MHz version to follow by March and a 433-MHz iteration scheduled for introduction late in the second quarter, said sources at Taiwan chip and motherboard makers. An Intel spokeswoman confirmed such chips would ship next year but wouldn't confirm the schedule.

S H O R T



## NEW PRODUCTS

**TATUNG SCIENCE & TECHNOLOGY INC.** has announced the Compstation U10-360, an entry-level, Unix-based desktop workstation.

According to the Milpitas, Calif., company, the workstation is powered by Sun Microsystems Inc.'s 360-MHz UltraSPARC-IIi processor.

The 64-bit processor supports five 32-bit Peripheral Component Interconnect devices at 33 MHz.

The system includes 128M bytes of RAM, 2M bytes of external cache, five drive bays and Sun's Solaris 7 operating system.

Pricing starts at \$4,990.  
**Tatung Science & Technology**  
(408) 383-0988  
[www.tsti.com](http://www.tsti.com)

**MIRAPPOINT INC.** has announced the M100 and the M1000, appliances for Internet E-mail at small-to-midsize and midsize-to-large companies, respectively.

According to the Menlo Park, Calif., company, the software/hardware thin servers were designed to install in minutes and off-load E-mail services from existing data servers.

They run an embedded operating system and provide software functionality for mail routing, client access and RAID-protected storage.

Both models support Post Office Protocol, Internet Messaging Access Protocol and Simple Mail Transfer Protocol.

Pricing for the M100 starts at \$14,895 for a 300-user license. Pricing for the M1000 starts at \$25,995 for an unlimited number of users.

**Mirapoint**  
(650) 470-7400  
[www.mirapoint.com](http://www.mirapoint.com)

**NOKIA DISPLAY PRODUCTS INC.** has announced the Nokia 800Xi, an 18-in. flat-panel display.

According to the Sausalito, Calif., company, the display weighs 14 pounds, is 3.2 in. deep and offers a viewable area equivalent to a 19-in. standard cathode ray tube monitor.

It has a maximum resolution of 1,280 by 1,024 pixels and 16.7 million true colors, according to Nokia.

The Nokia 800Xi costs \$3,399.  
**Nokia Display Products**  
(415) 331-4244  
[www.nokia.com](http://www.nokia.com)

**MICROTECH INTERNATIONAL INC.** has announced the Microtech Xpress USB, a Universal Serial Bus (USB) to SCSI converter.

According to the North Branford, Conn., company, the converter was designed as a cable with a standard USB connector on one end and a male SCSI DB25 connector at the other.

It supports up to seven devices in plug-and-play fashion, recognizing devices on the fly without requiring users to restart their computers. The maximum data throughput rate is 1.2M byte/sec.

The Xpress USB costs \$79.  
**Microtech International**  
(203) 483-9402  
[www.microtechint.com](http://www.microtechint.com)

**NSTOR CORPORATION INC.** has announced the CR8L, a RAID storage subsystem based on Ultra2 SCSI.

According to the Lake Mary, Fla., company, the subsystem supports 4G-byte, 9G-byte and 18G-byte disk drives, providing up to 144G bytes of storage per enclosure.

In a just-a-bunch-of-disks configuration, the system can support any operating system.

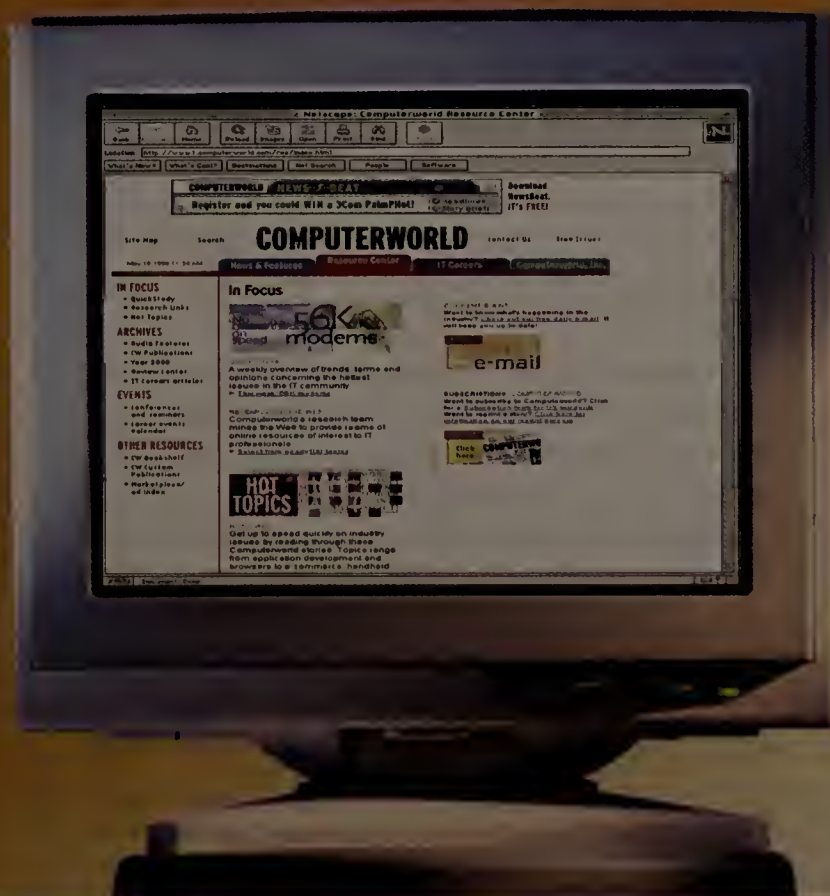
The optional Peripheral Component Interconnect RAID controller offers RAID functionality for Windows NT.

Pricing ranges from \$6,685 to \$32,040.

**NStor**  
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[www.nstor.com](http://www.nstor.com)

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## COMPUTERWORLD



## Managing



AMOCO'S G. GEOFFREY WOOD: WE INSIST ON THE RIGHT TO RELEASE ESCROW CODE

Are you relying on software escrow to protect your company's critical systems? Surprise! Recalcitrant vendors and flawed code can leave you vulnerable

# THE DANGERS BEHIND SOFTWARE ESCROW

BY GARY H. ANTHERS

**I**T SEEMED like a good idea at the time. Radisson Hotels Worldwide would deposit the vendor's source code for its mission-critical reservation system with an independent third party. If the vendor became unable to support it, the hotel chain could lay claim to the software and maintain it in-house.

When Radisson learned later that the vendor was going out of business, it notified the "escrow" company that it was invoking its contractual right to the code.

The problem was, the vendor refused to go along.

And, it turned out, the software that had been placed in escrow couldn't have been used to book guests at Radisson's 500 hotels in any case. "As soon as we got suspicious, we quickly called for an audit and found out there were many pieces of code and documentation missing," says Scott Heintzeman, vice president of knowledge technologies at Carlson Hospitality Group Inc. in Minneapolis, Radisson's parent company. "You get this very awful feeling in the pit of your stomach at that moment."

Software escrow is a popular practice that

can protect a user company when a software vendor goes belly-up, is acquired or becomes unwilling or unable to maintain software licensed to the user. But the path to salvation via escrow is so full of pitfalls that experts say many companies enjoy little real protection from it.

"Back in the 1970s, we thought software escrow was the thing to do," says Joe Auer, president of International Computer Negotiations Inc. in Winter Park, Fla. "But the practicality just hasn't been there; there are so many things that can go wrong."

Tom Morehouse, president of escrow company SourceFile in Oakland, Calif., says an independent audit showed that 80% of all the escrowed software he was getting had defects that rendered it unusable. When SourceFile began warning vendors in advance that it would check the contents of their deposits, that rate fell to 12%.

"You try to load it, and there's nothing on the diskettes, or it's clearly not the right software, or you get an error message, and it won't boot up, or it says you need a 'WinZip decompiler' that should have been included in the box but wasn't," Morehouse says.



Escrow agreements are usually three-way contracts among users, software vendors and a neutral third party that holds the source code, documentation and sometimes utilities needed to restore or run the software. Terms of the agreement specify the triggering events that entitle the user to obtain the "deposit."

But a huge stumbling block may arise when contracts require that the vendor agree to the release. If it doesn't agree, the user company could face months or years in court while its mission-critical application falls into disrepair.

Radisson finally got all the code and documentation needed to take over maintenance of the reservation system, but the going was messy and unpleasant. There was an "ethical breach" by the senior officer of the software company, Heintzeman says, and Radisson filed a personal fraud suit against him. Radisson agreed to drop the suit only if the vendor released the software, which it eventually did.

"Without the good fortune of being able to make a highly leveraged claim against this individual, I doubt we'd have gotten the software, and our business would have been at severe risk," Heintzeman says.

## Release terms are key

There are ways to avoid the kind of legal morass Radisson faced, says John Boruvka, sales and marketing vice president at DSI Technology Escrow Services Inc., an escrow company in San Francisco. He says users should try to include "demand release" clauses

used to satisfy damage claims by the vendor, according to attorney Marcelo Halpern.

Amoco Corp. buys more than \$100 million worth of software every year and has about 15 packages in escrow at any time. When a supplier of imaging software announced two years ago it was being acquired by another firm, the oil giant invoked an "Amoco decides" clause in its escrow agreement, and two weeks later it had the source code.

Amoco won't enter into an escrow agreement unless the contract gives it the sole right to decide when a condition warranting release of the software has occurred, says G. Geoffrey Wood, acting manager of IT sourcing. But Amoco will agree to an arbitration process that allows the vendor to seek damages after the deposit is released. Nevertheless, Wood acknowledges, " 'Amoco decides' is one of the harder terms to negotiate."

DSI releases just one out of every 200 deposits. "But the escrow accomplishes what we believe to be the major benefit to the licensee — to give them leverage with the vendor," Boruvka says. It enables users to escalate concerns and disputes to senior management at vendor companies, where they are more likely to get resolved, he says.

Another pitfall in escrow arrangements results from the software vendor's failure to maintain the code and documentation in the deposit and the user's failure to verify its contents. "The last thing you want to find is that tape you're pulling out of the deposit isn't the software but is a copy of the Rolling Stones," says David Weidenfeld, chief technology counsel at McDonald's Corp. "The escrow agreement has no value whatsoever if you are not going to audit the deposits on a regular basis."

In addition to insisting on complete and current code and documentation, users should ask to have included in the deposit a list of the vendor's employees who know the software, Weidenfeld advises.

Documentation can be especially troublesome. "If you don't have good documentation, the software might be worthless to you," Heintzeman says. "How is the software structured? What is the installation process? How is data configured? Keeping all that documentation current is a nightmare — it's almost a miracle for that to be accomplished."

## Trust, but verify

But not all users worry about such details. Salant Corp., a New York-based clothing manufacturer, escrows all its important application software, but it never verifies the contents of the deposits, nor does it expect the escrow agent to verify them. The important point, according to CIO John Shiels, is to have a license agreement that guarantees the licensee the right to obtain a complete and current copy of the source code — either from the escrow agent or directly from the vendor — if the vendor ceases to maintain it.

Only about 25% of DSI's software deposits are verified in detail, Boruvka says. Ten percent are verified by DSI at the user's request, for a fee that varies with the thoroughness of the check. And 15% are verified by the user at the vendor site as the escrow deposit is being prepared.

Morehouse says about 80% of Fortune 1,000 firms have at least one software package on deposit with an

## ESCROW TIPS

**SOFTWARE ESCROW CAN PROTECT YOU IF A vendor ceases to maintain a mission-critical application, but it's worthless if it isn't carefully set up and managed. Experts offer this advice to user companies:**

- \* Escrow is especially important when software is critical, not easily replaced or from a vendor with dubious staying power.
- \* Make sure release terms in the escrow agreement are spelled out clearly.
- \* Seek release terms that don't require vendor approval. Specify quick dispute resolution via arbitration.
- \* Try to get the vendor to pay escrow fees.
- \* Insist on the right to modify and improve the software if it's released to you.
- \* Verify that the deposit includes all needed software, documentation, utilities and vendor contacts. Insist on regular updates, and verify them.
- \* Make sure the escrow agent is a neutral third party or one that represents you.
- \* Review your own practices to ensure that your corporate escrow policies are being followed.
- \* Recognize that even with source code, you may be unable to maintain the software.

escrow agent. But that's a tiny fraction of the software that could be escrowed, because individual business units often fail to follow corporate escrow policies, he says.

Morehouse tells of a large British bank that had a policy to escrow all key software. But when a problem developed with one of its vendors, it discovered that no software from any vendor had ever been placed on deposit.

The costs, benefits and risks in software escrow have to be evaluated on a case-by-case basis, Halpern says. "Adding \$1,000 a year onto a multimillion-dollar contract to give you that little added bit of security is a no-brainer," he says. "But if you're talking about a \$50,000 piece of software, maybe the economics work out a bit differently."

Radisson Hotels has now, in essence, become its own escrow agent. "I keep a live copy of any source code we don't control on our own system perpetually," Heintzeman says. "It's a requirement of our business practice." Radisson's software license agreements also specify that the vendor must maintain documentation for the software, he says.

"Escrow seems on the surface to offer protection," Heintzeman says. "But when you understand the problem as it actually evolves, you realize there is very little protection, really." □

Anthes is Computerworld's editor at large. His E-mail address is [gary\\_anthes@cw.com](mailto:gary_anthes@cw.com).

**When SourceFile in Oakland, Calif., began warning vendors that it would check the contents of their software escrow deposits, the defect rate plunged to 12% from 80%.**

in their escrow agreements. In the version most favorable to users, the user simply notifies the escrow agent that cause for release exists, and the release is made within three days — with or without the vendor's agreement.

Gordon & Glickson PC, a Chicago law firm that specializes in information technology law, says both users and vendors may benefit from a contract that provides for release on demand but requires the user to post a substantial bond when the release is made. The money is held by the escrow agent and may be



# Y2K NIGHT SWEATS

Business partners, utilities, embedded chips, the press. Project managers and CIOs say that's what's keeping them up at night as '99 dawns

By Kathleen Melymuka

## IT'S BEGINNING.

As we move closer to 1999, the media are inching closer to panic mode. Before things get out of hand, we asked people in the trenches: What worries you most about year 2000?

**TONY DEL DUCA**,  
Year 2000 project manager  
Nabisco Inc.  
Parsippany, N.J.

That time bomb we haven't found — that we hope isn't there. When we find it, will we have the ability to react and correct it in time? If it explodes, can we contain the damage?

**JOE BIONE**, lead consultant,  
Automotive Industry Action Group  
Year 2000 Task Force  
Deloitte Consulting Group  
Detroit

Supply-chain interaction is critical to the success of Y2K as exemplified last year in the General Motors strike. We observed where one facility could literally shut down the world's largest corporation. This is true for a power company, a small business owner or a health care provider. There is very little room for error or even a brief disruption.

**DAVID REGISTER**,  
Year 2000 project manager  
PacifiCorp (utility)  
Portland, Ore.

The level of disinformation regarding the relative compliance of electric utilities. [Much] has been hyped. I'm constantly getting questions about how many months customers should plan on the lights being out. That's totally beyond the pale of any reasonable contingency planning.

**JIM JONES**, managing director,  
Year 2000 Group  
Information Management Forum  
Atlanta

The domino impact up and down the supply chain [as a result] of the smaller businesses not getting [a handle on year 2000 problems]. Those companies supply other companies that supply other companies. If tens of thousands of com-

panies have business interruptions at the same time, the effect up the supply chain will be immediate. And if people get laid off, then the economy could go into the tank.

**JOHN KOSKINEN**, chairman,  
President's Council  
on Year 2000 Conversion  
Organizations that are not paying attention to the problem, think that it doesn't apply to their operations or are distracted by more immediate challenges and therefore are doing little to address it.

**SUSAN VIK**, director of IT services  
Harvard Law School  
Cambridge, Mass.  
Embedded chips in things that we may not have thought of. I'm assuming we won't have any disasters or catastrophes because of them, but we could have surprises and inconveniences, and it could be costly.

**SCOTT WALESKI**, director of IT services  
Yankee Energy System Inc.  
Meriden, Conn.  
How much time we all spend passing [meaningless] paperwork. We're all spending a lot of time covering our tails — time that could be spent working on the problem.

**BOB BROWN**, president  
Bluegrass Y2K group  
Lexington, Ky.  
Government and utilities: electric power, water. In most areas, wastewater treatment is a government function, and I can't find anybody who's taking that seriously.

**SANDY GEIBER**,  
Year 2000 program manager  
Cessna Aircraft Co.  
Wichita, Kan.  
The FAA's ability to sustain the air-traffic-control system and manage flights. We keep hearing that the system should work but we shouldn't expect it to work to capacity. So, can we expect to ship parts by air? We're not getting any straightforward answers. I need to understand what they're planning so I can develop my own contingency plans.

**DOUG EY**, attorney  
Smith, Helms, Mulliss & Moore  
Charlotte, N.C.



[That] the approach to this will go from constructive to fearful. That it won't take much to trigger people, that people will shift into a 'protect-themselves' mode rather than a 'get-it-fixed' mode.

**ED YARDENI**, chief economist  
Deutsche Bank Securities  
New York  
The energy sector and its ability to deliver power without constant blackouts and brownouts. I'm [also] very concerned about Latin America and Asia — whether they will have their problems fixed in time, and if they don't, how that might disrupt the rest of us.

**STEVE JOST**, project manager,  
Year 2000 conversion services  
Deere & Co.  
Moline, Ill.  
The supply chain and the fact that half the countries in the world are doing nothing — that's what scares the hell out of me. We're such an integrated global economy [that] we can't have half

the countries in the world doing nothing and expect it to have no effect."

**Steve Kolodney**  
CIO, State of Washington  
Olympia  
Finding the right balance between concern with the problems and creating fear in the public perception. It's a very tricky balance. It doesn't take much of a push to create a perception of failure that will create panic in the minds of citizens, and we're starting to see some shrill takes on this.

**Rocco Longo**, town manager  
Duxbury, Mass.  
Convincing our community that we need to do something now. My challenge is to take something to the selectmen (the town's executive board) and finance committee and see if we can. □

Melymuka is Computerworld's senior editor, management. Her E-mail address is [kathleen\\_melymuka@cw.com](mailto:kathleen_melymuka@cw.com).



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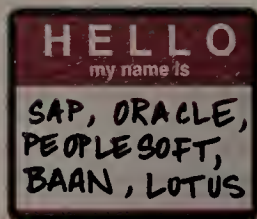
**AND IS A HACKER'S WORST  
NIGHTMARE.**



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As it stands, you have a Web server with the security and availability you'll need in the next century: your S/390.



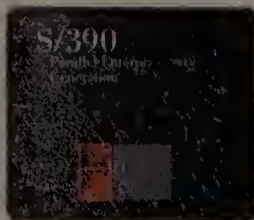
To date, 1,700 new or modernized Web applications are available for the S/390, with close to a thousand new ones on the way.



The IBM S/390 hums along with no more than five minutes of planned or unplanned downtime. A year.



A network based on multiple servers can be open to multiple problems. And enormous complexity equals enormous costs.



2,300 organizations have Web-enabled large enterprise servers. By 2000, more than 10,000 will be operational.

## IBM S/390. INSTANT WEB SERVER.

If you think about it, you have an enormous wealth of data on your S/390. By transforming their own S/390 enterprise server, many e-businesses have found themselves able to extend their existing system and leverage the data that resides there.

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Customers can track orders and check the status of their accounts online. Partners can collaborate with you at all hours to wring time out of the production cycle. Suppliers can post to your payment systems in real time.



After three decades of transformation, the IBM S/390 server sets the standard for e-business transaction serving.

## 24/7/365 ISN'T A LOCKER COMBINATION.

The hottest topics in computing today are scalability, security, and most of all, availability – issues that were once talked about primarily at the mainframe level. Now server companies are claiming mainframe attributes for their UNIX® and PC servers (in fact, chances are that at least one of your PC or UNIX servers is down right now).

These distributed servers are not an S/390 enterprise server and never will be. Not alone, not clustered together. And in an e-business environment, deploying a clutch of servers that can't deliver 24x7 availability is like locking customers out of the store. Customers who can go to a competitor's site with two clicks of the mouse.

However, with the latest generation of S/390 Parallel Sysplex® technology, you are guaranteed the closest thing to continuous computing, with a design point of 99.999% availability. As a Web server, it's capable of handling up to 400,000,000 hits or 20,000,000 transactions a day, or up to 50,000 users simultaneously.

## RUN A DATA MINE, NOT A SERVER FARM.

An infrastructure built on multiple servers can be open to multiple management problems. Just deploying a new major application requires a visit to each and every server. And in the environment of enterprise computing, it's a mathematical fact that enormous complexity equals enormous costs (no wonder Wachovia chose to eliminate 90 percent of the office automation servers in their information services department through an S/390 consolidation).

With your S/390 only a single copy of a program needs to be changed on the server in order to improve the interface of your Web site, deploy a new ERP program or upgrade your e-mail capabilities.

Instead of putting critical business applications at the fingertips of the users who need them, PC, and even many UNIX servers, create islands of information that can be nearly impossible to keep up-to-date.

Your bulletproof S/390, on the other hand, is a network of one, and has the ability to extract insight from mountains of information and reveal relationships and trends that were previously invisible.

## LOWER COSTS.

The transactional costs of e-business can be a fraction of those of traditional commerce. You already know that.

But costs can still vary wildly depending on what hardware strategy you use. As their Web volume grows and companies use the network to perform vital tasks like managing their supply chains or implementing customer service apps, the benefits of one scalable enterprise server over dozens or even hundreds of smaller servers become apparent.

An International Technology Group' survey found that with true enterprise servers, the average cost per use in transaction processing was 76 percent lower than for centralized UNIX servers.

That's a staggering difference. With your S/390 server, you get what is described by industry consultants as the lowest cost-per-user computing environment in the industry.

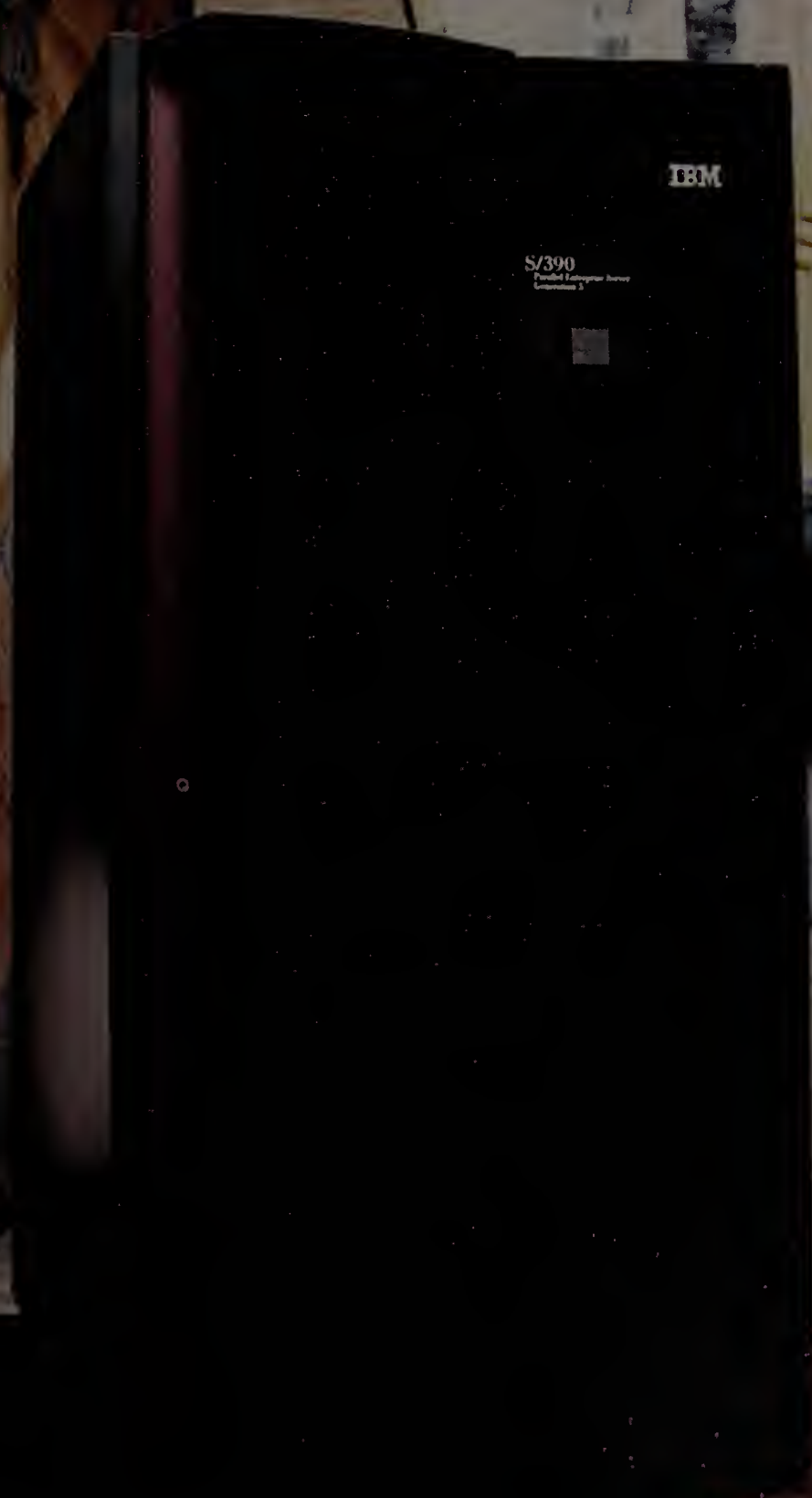
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**IBM**



JIM CHAMPY

## THE QUEST FOR ELEGANTLY SIMPLE SOFTWARE



The software industry perpetuates two seriously flawed assumptions: First, users want more managing. Second, one giant system can be made to fit all. This is too bad. Because just as information technology is becoming ubiquitous, it's also becoming more complex.

Trouble is, if technology is to achieve its real promise, it must be both omnipresent and easy to use.

Take enterprisewide systems. To install these gargantuan pieces of business software, a company must decide on thousands of "switches" that reflect how it wants to do business. I realize that, by definition, an enterprisewide system needs to cover most of a company's processes. But does it need to be so complex? Does it really need to be one giant system? It leaves me wondering whether companies are exchanging one complexity for a new intricacy that will be equally difficult to change the next time around.

I suppose we in the software services business should rejoice. Installing SAP, PeopleSoft and Baan software has created a niche industry for IT companies. But the issue goes beyond these big systems.

### TOO MANY BELLS AND WHISTLES

For several weeks, I've been an unwilling student of Microsoft's Outlook E-mail system. It's our new company standard. It certainly has more functionality than our old system; I'm told by our technology gurus that it will allow us to scale in users and applications. The problem is, I'm frustrated in trying to do something that had become reflexive in the last software suite. Through trial and error, I'm beginning to see Outlook's benefits. But I'm also seeing two other things not unique to Microsoft products.

My PC screen displays more than 90 icons, boxes and toolbars. Each time I boot up, there they are — like a set of Wurlitzer jukebox buttons for songs I'll never select.

Then there's the fact our "system" fails more frequently. I'm told it's a combination of the software and our servers. In time, it will get fixed and I'll enjoy all this new capability. But it also tells me that we're still in the Model-T era of personal computing: Just as our grandfathers had to know how to fix a flat tire, change the spark plugs and adjust a carburetor, today I have to be a bit of a technologist to run a PC.

Back then, Henry Ford told his customers they could "have any color you want as long as it's black." Similarly, software publishers tell us we can have anything we want — as long as it's what they believe we should have. One size fits all.

### SEGMENT AND SIMPLIFY

There's something to learn from Ford or, better yet, GM. As we all know, General Motors under Alfred Sloan ate Ford's lunch with a simple, powerful concept: segmentation. In other words, a car for every use and pocketbook. It worked well until GM got carried away with the size of its cars. It then experienced the double whammy of the Arab oil embargo and an assault by Japan's superbly engineered, reliable econoboxes. Those cars were simple and met their customers' needs.

I'm always wary of giving advice to those with as much success as

Microsoft. But maybe it's time to consider using all the power that sits in these computing devices to learn more about us and what we need and not force us to learn more about what's in the devices. No, I'm not a crypto-Luddite. I just want to see IT do what we fantasize is possible in our business and personal lives. Segmentation and simplification will be keys.

Where does the tendency toward complexity come from? I think it's because so many people who develop software revel in it. I learned this a long time ago while consulting for a company that sold 75,000 products. It was very successful; rather than simplify its offerings, the managers — very proudly — manipulated vast amounts of data. I also find this intellectual hubris in brilliant bridge players who can't resist telling you why you played the wrong card. What these folks don't understand, for all their IQ points, is that their customers don't necessarily share their fascination with minutiae.

Maybe software publishers should study the design theory of the architect Mies van der Rohe, who preached that "less is more." The software industry would be well-advised to re-examine its assumptions along van der Rohe's belief that the most elegant solution frequently is the simplest. □

*Champy is chairman of consulting at Perot Systems Corp. in Cambridge, Mass. His Internet address is [JimChampy@ps.net](mailto:JimChampy@ps.net).*

fyi.

## STUDY: INFORMATION HARD TO COME BY

Slicing and dicing information with ease apparently remains a dream for employees at most companies.

Only about one-third of the companies surveyed by The Hackett Group Inc. in Hudson, Ohio, say they can quickly access management information by geography, product, commodity, customer, supplier or major product.

One reason: Data standardization has a long way to go, with companies employing

enterprisewide languages and common definitions less than half the time.

The study of 50 companies with from \$15 million to \$150 billion in annual revenues says that the use of advanced technology — such as data warehousing, data mining, collaborative software, the Internet and intranets — is just beginning to make inroads into performance reporting. But companies still rely heavily on spreadsheets.

Other findings include:

- Executive information systems are not widely used, with 78% of executives not using them to help decision-making. Executives are more comfortable with paper reports, and reports indicate it's tough to alter their ways.
- Just over 20% of the average company's executives get management information online.

In another study of 100 companies' procurement prac-

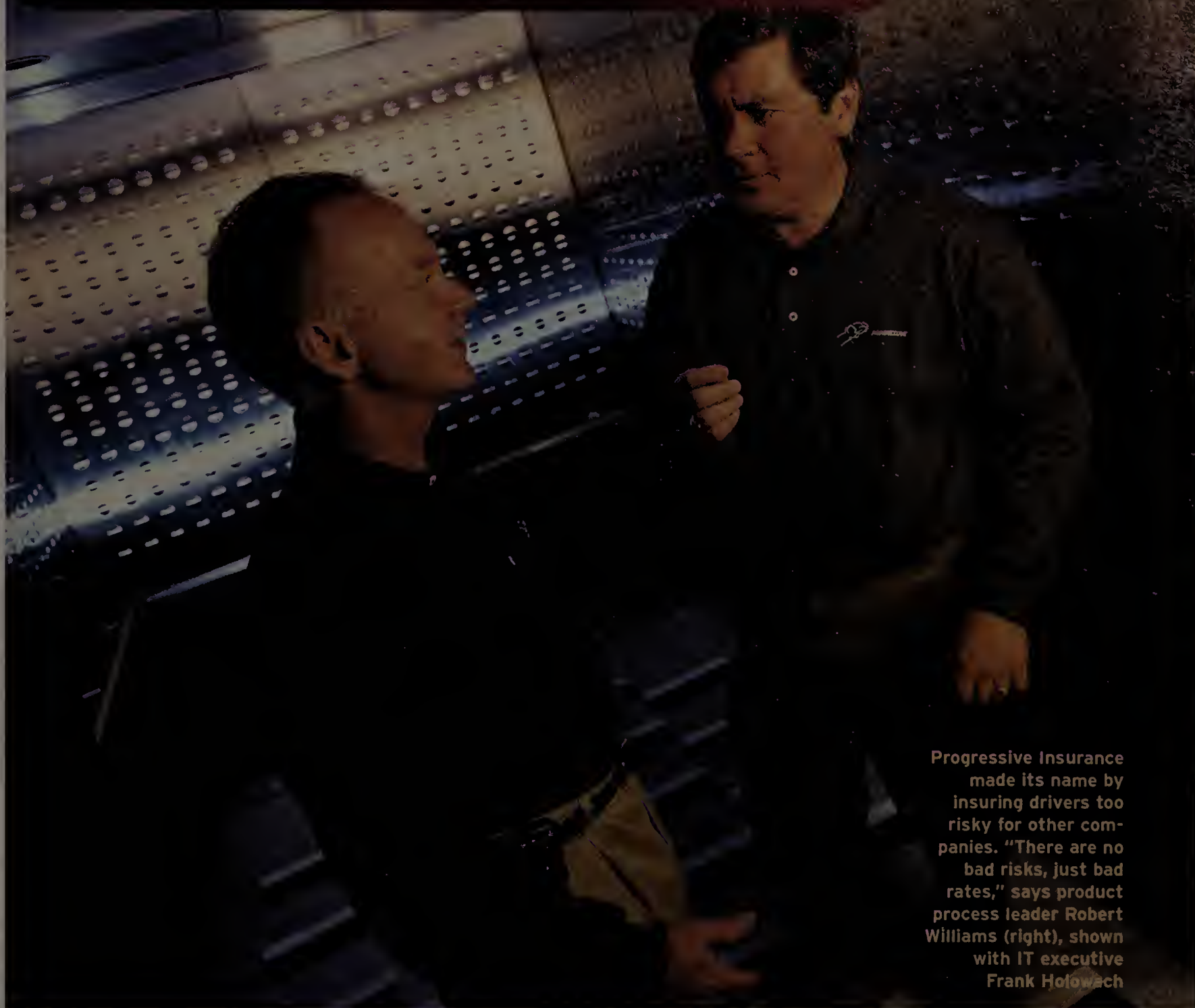
tices, Hackett found "tremendous room for improvement" in the use of technologies such as bar coding and electronic data interchange (EDI).

More than 80% of receiving transactions at the average company (one that spends 1% of purchased costs to manage procurement) are processed manually. And EDI is used, at most, only about 30% of the time.

But the companies that run the most efficient procurement functions use EDI about one-third more than the average company.



## In Depth



Progressive Insurance made its name by insuring drivers too risky for other companies. "There are no bad risks, just bad rates," says product process leader Robert Williams (right), shown with IT executive Frank Holowach

### BY GARY H. ANTHERS

SMART PRICING has a unique ability to improve profitability, yet pricing is poorly understood and badly managed in many companies.

But aided by distributed systems, decision-support tools, databases of customer histories and computer models, trail-blazing companies are pricing their products and services in ways that would have been impossible a few years ago. Although they're frequently reluctant to discuss their methods, these companies often report dramatic improvements in market share, profitability and/or customer loyalty as a result.

"Pricing is extremely important because small changes in price can translate into huge improvements in profitability," says Michael Marn, director of pricing services at McKinsey & Co. in Cleveland. In a study of financial data for 1,000 companies compiled by Compustat, McKinsey found that a 1% increase in price, at a constant sales volume, would produce on average a 7.4% increase in profitability. In fact, the McKinsey study showed that pricing has a greater impact on profitability than either sales volume increases or cost reductions, areas that typically receive far more management attention (see chart, page 66).

"A lot of companies just throw up their hands and say pricing isn't manageable," Marn says. Those companies take the classic but simplistic approach of "pricing to the market" — pegging their prices to competitors' prices — or they simply

The price, page 66

# The price had better be right

SOMEDAY, A COKE WILL COST MORE ON A HOT DAY THAN ON A COOL ONE. IT IS DRIVING A REVOLUTION IN PRICING



# The price had better be right

CONTINUED FROM PAGE 65

add up their production costs and tack on a standard markup.

Better methods often adjust prices dynamically, sometimes on a minute-by-minute or transaction-by-transaction basis, in order to bring supply and demand into balance. Certain methods consider the characteristics of each customer in setting a price, rewarding the most loyal. Others vary prices based on the value of a product or service to a customer.

These sophisticated methods require equally sophisticated technology. "There's a huge enabling role for information systems," Marn

says. "In 20 years, I've never seen a company improve its pricing performance without doing something on the systems side."

Airlines are masters of smart pricing. The major carriers have developed revenue management systems that use dynamic pricing to balance the supply and demand for seats. They forecast demand, analyze competitive fares, monitor booking activities and adjust prices on the fly. The payoff is enormous.

United Airlines Inc. made 10 million fare changes in the U.S. last year, according to Bob Merz, director of domestic revenue management. That number is likely to rise as the airline this month installs a \$20 million inventory management system called Orion.

Orion does demand forecasting and seat/fare optimization on a 47-processor IBM RS/6000 — the same technology used by IBM's chess-playing Deep Blue. The massively parallel machine computes at 8 billion instructions per second and holds 43G bytes of RAM and 3T bytes of disk storage. It can complete in 15 minutes a process that took 24 hours on United's mainframe.

## SPEEDY ADJUSTMENTS

That power enables United to forecast and optimize at a much finer granularity. Previously, 331-day forecasts were done by value buckets — groupings of passengers whose combinations of fares and itineraries produced the same net return to United. Now, forecasts are being generated for every possible combination of itinerary and fare, increasing the number of forecasts per flight from an average of 40 to well over 1,000. That lets the airline continually adjust the number of seats in any fare class in order to fill its planes with the highest-value passengers.

Orion this month began to use a new, more powerful optimization technique for deciding how many seats on a flight to make available at each fare. It now considers all flights for a given day together, rather than independently,

allowing it to optimize the entire system at once by considering flight connections. Simulations predict that such an improvement alone will boost profits for United by \$100 million per year, says Bob Bongiorno, director of information services, research and development for the airline.

Systems based on some of those same concepts have begun to spring up in other industries, including hotels, rental cars, telecommunications and utilities. For example, National Car Rental System Inc. in Bloomington, Minn., credits dynamic pricing with snatching it from the jaws of bankruptcy four years ago.

National's pricing system was manual, cumbersome and extremely slow — the company could handle only about 60 price changes per day. Even worse, prices were stagnant. At peak demand, National was emptying its lots but leaving money on the table; at slack times, cars stood idle while drivers flocked to lower-priced competitors.

A new automated pricing system, which can make 40,000 price changes per day, boosted National's revenue \$56 million in the first year and returned it to profitability, according to published reports.

National declined to be interviewed for this story. But an account by the Institute for Operations Research and the Management Sciences says the revenue management system combines 60-day forecasts with continuous, transaction-level information on advanced bookings, car availability, booking restrictions, cancellations and booking inquiries. It then sends recommendations on pricing, availability and booking restrictions to the computer terminals of National's revenue managers.

National's pricing algorithms take into consideration consumer behavior. For example, business travelers are relatively price-insensitive and book late, whereas leisure travelers book well in advance but shop for the lowest rates. The system exploits those traits by raising rates for a given day as it approaches.

Progressive Insurance Co. in Mayfield Village, Ohio, has been called "the prince of smart pricing" by *Fortune* magazine. Although in recent years it has broadened its coverage, the company rose to success by insuring the riskiest drivers that other companies were afraid to take on. "There are no bad risks, just bad rates," explains Robert Williams, product process leader.

Like most insurance companies, Progressive uses sophisticated software to model risks and project the financial returns from various rates. But the company enjoys a special advantage with its custom system for rapidly propagating those rates into its production applications. Says information technology executive Frank Holowach, "I've talked to competitors who say their whole strategy is to copy what we do. But our real advantage is not so much the new twist we might find, but our ability to get it out ahead of the competitor's ability to copy it."

Moving prices from Progressive's Unix-

based simulation software into production systems is no trivial task. New prices must simultaneously be propagated to the remote PCs of 30,000 independent agents, to different software used by 1,500 direct salespeople, to the company's Internet-based quote system and to the mainframe-based policy administration system.

IT people and actuaries at Progressive share work space to foster collaboration, and career paths encourage migration between IT and business functions. "There are some parts of the organization where it's hard to know if someone's part of IT or part of pricing," Holowach says.

## NEW WORLD

"The time of flat, uniform pricing is over," says marketing consultant Hermann Simon, CEO of Simon, Kucher & Partners LLC in Cambridge, Mass. He says profits or market share — and sometimes both — can be boosted by pricing structures that are multidimensional and "value-based."

For example, one of Hewlett-Packard Co.'s business units offered just two service options to its business customers — one with unlimited service at a fixed price and the other with all service charged for as provided — and both with the same guaranteed response time. Simon, Kucher used modeling techniques and computerized interviewing tools to analyze customers' preferences and concluded that cus-

tomers would be more satisfied — hence, willing to pay more — for options with different service response times and different mixes of fixed and variable price components. Now there are five service options, and HP has seen its profits on service rise more than 20%, Simon says.

Companies often lack real-time support tools for pricing, Marn says. "A customer calls in and says, 'I'll buy another truckload if you give me another 2% off.' What you'd like is to just hit a button and say, 'OK, here's the price the customer's been buying at, here's the product mix he's been buying, here's what our cost to serve has been and here's our profit on this account. Now let's look at the profitability of 10 other similar accounts and see if we can give this guy an additional 2%.'"

Marn also recommends putting in monitoring and control tools. "Are you doing better or worse in pricing this year vs. last? A lot of companies just scratch their heads and don't know the answer to that," he says.

Humorist Dave Barry once asserted that fares are determined by "Rudy the Fare Chicken, who decides the price of each ticket by pecking on a computer keyboard sprinkled with corn." But that hasn't stopped people from flying United, which last year hauled in \$17 billion while making those 10 million price changes. Maybe value-based pricing is ready for takeoff. □

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## Pricing as a profit lever

A 1% improvement in these measures ...

... improves operating profit by these amounts, on average

PRICE	7.4%
VARIABLE COST	4.9%
SALES VOLUME	2.4%
FIXED COST	1.4%

Source: McKinsey & Co. averages using Compustat data for 1,000 companies





*"At Cisco Bootcamp we learned multi-protocol routing. Configuring IP was a bit familiar. But we also needed to configure IPX and AppleTalk, which was completely foreign to me. Through a lot of troubleshooting and working along with my teammates, we got the whole network up and running."*

*- Mark, age 17,  
Cisco Networking  
Academy student*

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**There are 346,000 in  
information technology.**

**You do the math.**

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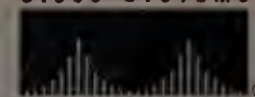
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## IT Careers

## Reigning cats &amp;

**Pet-to-work policies aren't for everyone. In fact, few IT shops have them.**

**And though many that do say they're the purr-fect benefit, those that don't cite plenty of pet peeves**

By Candee Wilde

**O**n a long afternoon in the IT department at Burton Snowboards, Reilly sometimes tackles Charley, hoping to lure her into a friendly tussle on the floor.

After that, a little catnap under a desk often is in order.

Jennifer Mincar, director of information technology at Burton, isn't troubled in the least by that behavior among her troops. The most she will do is pat them on the head while they snooze or maybe scratch them behind the ears.

Scratch their ears? Well, that isn't as strange as it may sound. Reilly and Charley are dogs that accompany their owners to work at Burton, a snowboard manufacturer in Burlington, Vt.

Mincar, who doesn't bring a pet to work, says having the two dogs in the department almost every day hasn't caused any significant disruptions. "It hasn't proven to be a problem," she says. "The employees enjoy it, and it certainly has brought up some comical moments."

For example, there was the day when Reilly's co-owners, Leslie Paolucci, an application specialist at Burton, and Scott Koerner, network systems administrator, were both in a departmental meeting. They had deposited 7-week-old Reilly with a dog-sitter in another department.

"We were in the middle of a discussion when we heard an ear-piercing yelping coming from the office area," Paolucci says. "Scott and I both recognized immediately that it was

Reilly and ran out of the meeting." As it turned out, Reilly had knocked down a small barrier of boxes the sitter had built to keep Reilly near the sitter's desk. Reilly had then scampered off to pay a social call to a German shepherd that came to work with an employee in the warranty department.

"The German shepherd didn't feel like playing so he pinned Reilly down. Reilly cried like he was being killed. He wasn't actually hurt at all, just a little wet. But we were pretty embarrassed about leaving the meeting and putting the whole office on alert," Paolucci recalls.

Paolucci says she wouldn't have gotten Reilly if she hadn't been able to bring him to the office. "I would feel like I was neglecting him if he was home alone all day," she says.

Reilly is now 7 months old and, as Koerner says, has become the perfect office dog. He is quiet, calm and gets along with everyone he meets — on two feet or four. Those qualities are essential in an animal that spends all day in an office.

Even assuming the animals are quiet, however, there can be problems associated with letting pets in an office. Some employees could be allergic to cats or afraid of dogs. There's

always the risk someone could get bitten. And what if someone wants to bring in a six-foot boa constrictor or a hairy tarantula? After all, people's ideas of pets can cover a wide range of creatures. So why are some companies — albeit not many — willing to take a chance by allowing animals to come to their offices?

For example, pets can improve communication and team building, according to Ken Burkard, manager of applications integration at The Iams Co., a pet-food manufacturer in Dayton, Ohio. "We encourage people to bring their pets to work," he says. "For shyer people or new people, the animals provide a great way of breaking the ice. It's easier to go meet other people when they have dogs and cats in their cubicles with them."

During interviews, many Iams managers tell potential employees that their pets will be welcome at the office. "We consider it a benefit of

IT manager Tom Brenne routinely brings his 3-year-old beagle Max to work at G. Evans Good & Assoc. Inc.



STEVE CURTIS

employment," Burkard says.

Gloria Tapp, an IT applications programmer who brings her cat, Jasmine, to work at Iams also says animals have a beneficial effect on the work environment. "On a tough day, it's great to have a dog or cat to hug and pet," she says.

Burkard, Tapp's boss, says employees have to be responsible about their work, even with pets around. "Gloria could have major problems if she is trying to work on applications and people come by all day to pet the cat," he says. "But our group does a good job of avoiding that problem. The people here are professional and adult and know they have to get their work done."

As much as Burkard supports the notion of pets at work, he recognizes that it isn't appropriate for every employee or for every animal. Burkard is a dog owner, too, but his 110-pound golden retriever has been to the office



# dogs

only twice. "My dog is pretty hyper. He might jump on people and knock them over," he says. "Plus, I move around a lot to different departments and am in lots of meetings. I don't want to leave him alone in my office."

Burkard says IT workers who have positions that require them to spend most of their day at their desk are the best candidates for bringing a pet to the job.

Tapp keeps her cat, Jasmine, attached to her desk with a series of leashes. The Tonkinese feline (a cross between Burmese and Siamese) has about 25 feet of roaming room. "She can reach other people and go into the conference room," Tapp says. "She likes to sleep on top of the computer monitors, especially in the winter."

Tapp used to bring Jasmine to work several times per week but has cut back to just once per week "mostly because I don't want her to bother people who are allergic, or to wear out her welcome. I love bringing her and wouldn't want anything to happen to stop that."

## NOT EVERY DOG HAS ITS DAY

Richard Wonder, president of the New York-based executive search firm Richard Wonder & Associates, says he doesn't think allowing animals in an IT department is a good idea — despite the appeal to some employees. "In this era of providing child care, allowing casual dress and making every attempt to keep employees happy and minimize turnover, this is a very novel idea," Wonder concedes. "However, visions of kitty litter boxes and pooper scoopers, barking dogs and meowing cats in a technical environment seems inconceivable."

Wonder says in the 14 years he has spent interviewing technical candidates, he has never run across a person who insisted on finding a job at a company that allows pets. Nor, to his knowledge, do any of his 350 clients have a "pets-at-work" policy.

But they do exist. Some are small companies with relatively few employees. Many of the larger ones are technology firms in Silicon Valley. They include Autodesk Inc. in San Rafael, Calif.; Netscape Communications Corp. in Mountain View, Calif.; and Excite Inc. in Redwood City, Calif. Some firms that allow pets say it's a benefit important enough to some employees that it helps them attract and retain professionals in heavy demand.



Burton application specialists Leslie Paolucci (left) and Julie Dederer with dogs Reilly (left) and Charley

But Ethan Winning, president of the management and employee relations consulting firm E. A. Winning Associates Inc. in Walnut Creek Calif., is staunchly opposed to allowing pets in an office.

"It's a bad idea," Winning says. "Not everyone likes to have animals at work. It's tough enough to get along with fellow employees, let alone with their pets. 'Love me, love my dog' does not work at work."

But Paolucci says she can concentrate better when Reilly is with her. She even concedes that her dog interferes with her work sometimes. She says she makes up for that by budgeting her time in the office more carefully and putting in additional hours at home. In terms of productivity, having her dog at work "is a plus-minus thing," she says.

"With Reilly here, I don't fall into the trap of working myself into the ground. I

have to take him out, and sometimes being able to step away from the computer for 10 minutes allows me to be more productive when I come back." And many employees find that petting a dog — one's own or someone else's — can brighten a stressful day, she says.

Tom Brenneis, IT manager at the architectural firm Gould Evans Goodman Associates in Kansas City, Mo., takes full advantage of his company's pet-friendly position. He supervises an eight-person technical staff and his 3-year-old beagle, Max.

"I bring him a couple of times a week, especially if I'm going to be working late. It's great. He sleeps next to the chair in my office or curls up in the corner during a meeting. If I go for a soda, he follows me," Brenneis says. "It takes a lot of the stress out of the workday when you can turn around and pet your dog just like you would at home."

Brenneis didn't accept the job at Gould Evans Goodman just because Max would be welcome. But the pets policy did play a part in his decision.

"When I was looking at places to work in technology, I wanted to make sure I worked for a company open to new ways of doing things," he says. "While I won't say that I came here because they allow dogs in the office, that open-mindedness indicated the company would probably be open-minded in other areas."

Though experts doubt that pets will begin to pop up in IT departments from coast to coast, allowing animals in the office seems to work well for some companies. For IT managers considering a pets policy, here's a tip from Mincar, Burton Snowboard's IT director: "Don't allow dogs in the server room. Animal hair can wreak havoc with machines." □

Wilde is a freelance writer in Easton, Conn.

## Purr-fect opportunities

"We encourage people to bring their pets to work. For shyer people or new people, the animals provide a great way of breaking the ice. It's easier to go meet other people when they have dogs and cats in their cubicles with them."

— Ken Burkard

"With Reilly here, I don't fall into the trap of working myself into the ground. I have to take him out, and sometimes being able to step away from the computer for 10 minutes allows me to be more productive when I come back."

— Leslie Paolucci

"When I was looking at places to work in technology, I wanted to make sure I worked for a company open to new ways of doing things. While I won't say that I came here because they allow dogs in the office, that open-mindedness indicated the company would probably be open-minded in other areas."

— Tom Brenneis

## What a fur-ball idea!

"It's a bad idea. Not everyone likes to have animals at work. It's tough enough to get along with fellow employees, let alone with their pets. 'Love me, love my dog' does not work at work."

— Ethan Winning

"This is a very novel idea. However, visions of kitty litter boxes and pooper scoopers, barking dogs and meowing cats in a technical environment seems inconceivable."

— Richard Wonder

## 10 tips for allowing pets at work

1. Poll employees before initiating a new policy allowing pets.
2. Appoint an employee to keep a daily "attendance" sheet documenting the animals in the office.
3. Establish a written pets policy.
4. List any animals, birds, reptiles, insects or fish that aren't welcome in the office.
5. Establish which areas of a building or office are off-limits to pets.
6. Require employees to bring in documents proving pets have had all necessary vaccinations.
7. Establish infractions, such as for excessive noise, destructiveness, biting, fighting with other animals or repeated failure to relieve themselves in an appropriate place, that will result in a pet being permanently barred.
8. Designate an outdoor area for walking dogs.
9. Require pet owners to be in control of their companions at all times, either by keeping them on a leash or in a crate or cage.
10. Accommodate employees with allergies or who dislike animals by providing a pet-free working area.

— Candee Wilde



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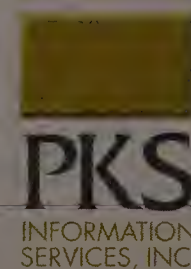
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**Programmer/Analyst** to plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems. Evaluates user requests for new or modified programs to determine feasibility and cost and time required, compatibility with current systems and computer capabilities. Formulates plans outlining steps required to develop program, converts project specs into sequence of detailed instructions and logical steps for coding into language processable by computer, applying knowledge of computer programming techniques and languages. Analyzes, reviews and alters programs to increase operating efficiency or adapt to new requirements. Installs and tests programs at user site and consults with user personnel on site. Bachelor in Computer Sc. or Elec. Eng., plus two yr. exp. in job offered or 2 yr. exp. as systems analyst or software engineer, with the ability to perform the main job duties, req. Salary \$55,230/yr. Job site: various unanticipated sites throughout the U.S. Employer location: Pittsburgh. Send resume to Job #7244418, James Mackin, Pittsburgh North Job Center, 1122 Western Ave., Pittsburgh, PA 15233

**Systems Analysts** to analyze user requirements, procedures and problems to improve existing computer systems and software. Confer with user personnel to analyze current operational procedures, identify problems, and learn specific input and output requirements. Write detailed descriptions of user needs, program functions, and steps required to develop or modify computer programs. Review computer system capabilities to determine if requested program or program change is possible within existing system. Evaluate effectiveness of existing information processing systems. Study development of new information systems to meet current and projected needs. Plan and prepare documentation of the program development. Upgrade systems and correct errors to maintain system after implementation. Bachelor or equivalent in Computer Sc. plus two yr. exp. in job offered req. Salary \$54,000/yr. Job site: various unanticipated sites throughout the U.S. Employer location: Pittsburgh. Send resume to Job #7044415, Greg Schwing, Pittsburgh South Job Center, 2100 Wharton Street, Pittsburgh, PA 15203.

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## REGIONAL SCOPE

### Southern Florida

ORLANDO/ORANGE COUNTY CONVENTION &amp; VISITORS BUREAU INC.

# From MAÑANA to MANIA

By Jill Vitiello

Take heart, Mouseketeers: Florida remains a bastion of family fun and fantasy. The culture

and companies are working with the state to develop economic incentives to attract and keep Information Age companies.

It's difficult to persuade people from out of state to come to work in Florida because they are concerned that, if they leave or lose their jobs, there are no other IT opportunities in the state.

"We do have a critical mass of high-tech companies in the tricity area of Dade, Broward and Palm Beach," Moskowitz says.

#### SMOOTH SAILING

Plenty of opportunities exist for IT professionals who want a fun, Floridian-type job. At Carnival Corp. in Miami, each of the cruise line's 12 ships always has at least one IT manager onboard.

"It takes a special person to work onboard," says James Bussey, vice president of information systems at Carnival. "You need the requisite skills to support technology — from ship-to-shore communications to fixing a printer. You must be a diplomat, too. You interact with the captain, crew members and passengers."

Generally, the job of onboard IT manager attracts young singles with a yen for travel — but not always. Bussey knows some 20-year veterans who love the work. Right now, Bussey says, he's looking for experts in Cobol, Oracle, Visual Basic, Windows NT and Unix.

He's also interested in hiring those with skills in data warehousing, database support and field support. Most of these positions are for landlubbers.

He recruits globally over the Internet and recently hired people from as far

away as Bulgaria and Indonesia.

"South Florida is a gateway to the Caribbean, Mexico, Central and South America," Bussey says. "The IT professionals we hire from other countries enrich our own culture. That's one of the delightful parts of living and working here. We're leveraging the diversity of our workforce to make Florida a happening place."

#### WE HAVE LIFTOFF

Florida is also home to the Kennedy Space Center in Orlando, which launches space shuttles and aging astronauts into orbit.

And it's IT that makes all systems go. Although NASA has a hiring freeze, Kennedy is using IT contractors to supplement in-house talent, according to Barbara Brown, CIO at Kennedy. NASA employees are getting IT training in not just the Web, but also in communications systems and networks.

"One of our top priorities is IT security," Brown says.

As for Kennedy, it's bringing in IT profes-

sionals with experience in network security, firewalls and systems access and administration.

When John Glenn returned to space, there were extraordinary demands on the center's network and telephone system — prompting Kennedy to add cellular systems to handle the extra traffic. The IT infrastructure that controlled the actual launch, however, was all systems go.

"Launch is our business," Brown says. "We're prepared for launch." □

#### Unemployment rates

Area	Rate
Florida	4.5%
Miami	6.3%
Orlando	3.0%
Tampa	3.0%

SOURCE: BUREAU OF LABOR STATISTICS, 1998.

shift, however, is good news for IT professionals.

Opportunities abound not only in the industries traditionally associated with Florida, but also in academia and high tech.

At the University of Miami, for example, IT professionals with Web skills are in hot demand.

"We skipped right over client/server and went straight to the Web," says Tamares, who is searching for people with project management skills and database experience to join the 180-member IT staff.

Students, faculty and industry are placing huge demands on universities in Florida. Dorm rooms feature voice and data lines for every student. "We're wired to the pillow," Tamares says.

#### HIGH-TECH PRIORITY

"Attracting and retaining IT talent in Florida is the No. 1 priority of our members," says Jo Moskowitz, executive director of the Florida Council of the American Electronics Association (AEA) in Fort Lauderdale. The Florida Council is spending about \$100,000 per employee to recruit and relocate software engineers from Silicon Valley to the Sunshine State.

To find more homegrown IT experts, the AEA has joined forces with members of academia and state legislators. The University of Miami, Florida International University and Florida Atlantic University are adding to the local IT labor pool by offering IT certificate training programs and steering engineering graduates to jobs in Florida. The schools

"Florida used to be sort of sleepy. Everything was 'mañana.' That's all changed. Now we are in a global culture, and we operate at the speed of business," says Lewis Tamares, vice president of information technology, CIO and dean of the College of Engineering at the University of Miami.

Vitiello is a freelance writer in East Brunswick, N.J.



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#### Manager of Systems Services:

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#### System/Network Security Analyst:

This candidate will be responsible for setting, implementing, and auditing of all aspects of data & network security. Experience with the following products are a plus - Cisco, 3COM, BAY Networks, NT, Novell, HP UX, Oracle, and SUN Solaris.

Requires a BS in CS/CIS/MIS or equivalent and 3+ years IS experience. Requires a minimum of 2-4 years experience in networking, systems, and databases.

The computing environment is HP/UX on HP9000s, NT, Novell, and Oracle, operating over a frame relay network with Cisco routers.

#### Voice Engineer:

The candidate will provide high-end technical expertise and show leadership in building and maintaining all voice related equipment and services such as PBX and voice-mail design, call accounting interfaces, predictive dialers, ACDs and voice network interfaces. Experience with ISDN circuits and Lucent products are helpful. Engineer will be required to provide detailed analysis on trunking capacities for more than 100 locations worldwide. Must have the ability to troubleshoot complex telecommunications problems. Electrical or computer engineering degree required.

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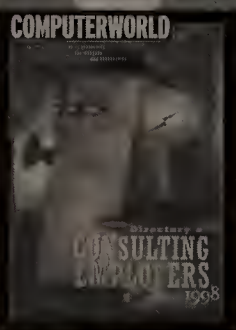


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This position serves as a liaison between project and operations groups and the IR organization. Requirements include: project management skills relating to technical computer applications. Previous experience with RDBMS is essential. Additionally, development of applications in a client server environment or mainframe computing environment is a plus.

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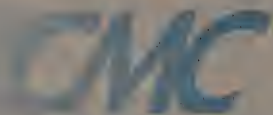
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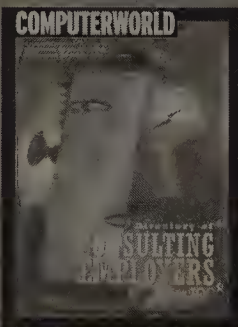
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**Programmer Analyst (Unix Networking/Sys. Admin. & Sys. Prog.):** Install, customize & fine tune performance of operating sys. on heterogeneous platforms. Achieve connectivity of workstations using networking technologies. Perform sys. configuration mgmt. for both h'dware & s'tware. Provide user support & network trouble-shooting services. Carry out performance tuning of application packages such as Relational Database Mgmt Systems (RDBMS) under Unix operating system. Manage TCP/IP based services such as NFS, NIS, TFP, TELNET, etc. Perform network mgmt. using SNMP & related tools. Ensure fault tolerant printer services & back-up mgmt. procedures. Utilizing knowl. of installation of WAN connectivity w/heterogeneous h'dware platforms using routers &/or gateways over leased & dedicated circuits. Using knowl. of internals on operating sys. for patching & coding device drivers & network program'g using IP/IPX, TLI, Streams & SOCKETS. Req: Bachelors degree in comp. sci.- math/ engr'g/sci./bus.-commerce (or equiv.) & 1 yr exp in job or as software engineer/systems analyst. Must have appropriate combination of skills as follows: 1 of A & 2 of B or 1 of D; or 1 of A & 2 of B & 2 of C; or 1 of A & 2 of C & 2 of D as follows: A) Operating Sys.: IBM AIX, HP-UX, Sun Solaris, DEC Open VMS/Unix, SCO Unix/ODT, USL Unix SVR4, UnixWare; B) LAN/WAN Connectivity/Networking Protocols: TCP/IP, IPX/SPX, NFS, Bridges, Routers, Gateways, X-25, X.400, ISDN, ATM; C) System/Network Program'g: Perl, Korn, Shell, C Shell, RCP, TLI, Streams, SOCKETS, API & toolkits, DDK, AWK, SED, LEX, YACC; D) Networking techs: Ethernet, Token Ring, FDDI; high mobility preferred (multiple positions). 40 hrs/wk; \$55,300-\$65,000/yr. Report/submit resume to James Clarke, Mgr., Uniontown Job Ctr., 32 Iowa St., Uniontown, PA 15401. JO #2022442.

**Technical Projects Coordinator:** Develop, implement and manage large technology-related projects such as a proprietary Document Management System (DMS) for the insurance brokerage industry. Index documents & develop indexing guidelines for DMS using Natural Language processing. Provide technical support services & training to corporate employees & clients. Troubleshoot computer-related problems & resolve technical issues in conjunction with MIS Department. Develop multimedia presentations using screen-cams, audio & video to showcase brokerage firm proprietary technology & risk management capabilities to current/prospective clients. Research, prepare, edit & coordinate session materials & presentations for industry conferences & educational/training seminars. Review & edit multimedia presentations & session materials to ensure consistency in language, concept & presentation. Design, develop & implement computer assisted instruction CD-ROMs to train corporate employees & clients on various industry-related technologies. Must have a Master's degree in Computer Science. Must have experience (academic or professional) in each of the following: 1) computer assisted instruction; 2) indexing documents using Natural Language processing; & 3) researching, preparing & editing presentations for conferences or seminars. (Academic or professional experience may be demonstrated through projects or publications). 40 hrs/wk, 8:30am - 5:00pm. Overtime required as needed. \$56,500/yr. Overtime pay exempt. Must have proof of legal authority to work permanently in the U.S. Send resumes to the ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, Illinois 60605. Attention: Arlene Throver. Reference # V-IL 21898-T. AN EMPLOYER PAID AD. NO CALLS - SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

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## IT CAREERS EAST

Programmer/Analyst needed by Construction Co. in Baltimore, MD. BS in Comp Sci required. Respond by resume to: HR Dept, VHT Construction, Inc, 11 E. Mount Royal Ave, Ste 100, Baltimore, MD 21201.

SOFTWARE ENGINEER needed by Computer Services Co. in Chester, NJ. Must have 1 yr exp analyzing, dsgn & dvlpmnt of comp. s/ware using C/C++, Visual Basic, SQL, Perl & HTML in UNIX & WinNT envrmt. Masters in Comp Sci, Comp Engg or Electrical Engg required. Respond by resume to: HR Dept, Professional Computer Consulting Inc, 25 Ammerman Way, PO Box 756, Chester, NJ 07930.

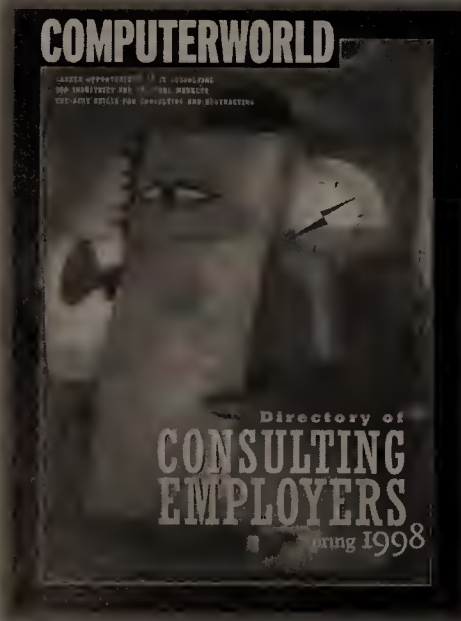
COPY Software Developer, Houston. Design & develop software in a Windows NT environment developing scientific applications using C++ and SQL. Candidates must have at least two years experience developing modern GUI Windows applications. Master's degree in Computer Science is also required. Send resume: Wendy Farren, Stoner Associates, PO Box 86, Carlisle, PA 17013

Programmer/Analyst-Manh-Design, develop, enhance funds transfer application on dec vax/vms using dec-intact, dec-rms, dec-c; program applications using dexterity. Must have: B.S. Comp. Sci., exp using relational database, exp as programmer. 35 hr/wk (9am-5pm); competitive salary. Send resume/letter to GIFTS Software Inc. 150E 55th St., New York, NY 10022. Attn.: Maria Nieves.

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**SOFTWARE ENGINEER** to design, develop, implement, test, maintain and support application software and relational databases on client/server architecture using C, DB-LIB, SQL Monitor, ISQL, ERWIN and SYBASE RDBMS, SYBASE SQL and SYBASE APT Workbench on Windows, UNIX, SunOS and Novell Netware platforms. Require: M.S. degree in Computer Science, or a closely related field, with two years of experience in the job offered. Extensive travel on assignments to various client sites within the U.S. is required. Salary: \$65,000 per year, 8 am to 5 pm, M-F. Send resume to: Raghavendra Kulkarni, President, Pro Softnet Corporation, 6525 The Corners Parkway, Norcross, GA 30092; Attn: Job SM.

**DATABASE ANALYST** to analyze, design and administer ORACLE, DB2/6000 and SAP R/3 databases using SQL \*DBA, Oracle Enterprise Manager, SQL \*Plus, PL/SQL, SQL\*Net, SQL\*Loader, SQL\* Forms, SQL\*Menu, SQL\* Report Writer and UNIX K-Shell scripts. Require: M.S. degree in Computer Science, or a closely related field, with two years of experience in the job offered or as a Systems Analyst. Extensive travel on assignments to various client sites within the U.S. is required. Salary: \$65,000 per year, 8 am to 5 pm, M-F. Send resume to: Vasu Srinivasan, Vice President, Koni Ameri Tech Services, Inc., 5950 Live Oak Parkway, Suite 250, Norcross, GA 30093; Attn: Job RS.

**Programmer/Analysts** needed by Telecom & Internet Services Co. in South Plainfield, NJ. Must have 2 yrs exp in analyzing, dsngng, dvlpng, writing, testing & implmtg applcs for telecom, computer telephony & internet in a multi-platform envrmt (UNIX, DOS, Windows) C++, RDBMS (Oracle or Informix), GUI dvlpmt tools (PowerBuilder or Visual Basic) & TCP/IP. Bachelors (any field) req'd. Respond by resume to: Sequel Communications, Inc., 3001 Hadley Rd., #7, S. Plainfield, NJ 07080.

**SOFTWARE DEVELOPER** (Woodbury, NY) Develop & support multimedia digital recording & monitoring systems to inbound & outbound call centers, financial institutions, emergency "911" services, & users of call monitoring & recording technology. Bachelor's in Comp. Sci./Eng/Educ (Mech-Comp. Sci) & 1yr exp. in RMX operating systems & PLM programming language required. Send resumes to: Human Resources Dept., 111, Converse Infomedia Systems, Bldg 234, Crossway Park Drive, Woodbury, NY 11797.

**Programmer/Analysts** needed by Telecom & Internet Services Co. in South Plainfield, NJ. Must have 2 yrs exp in analyzing, dsngng, dvlpng, writing, testing & implmtg applcs for telecom, computer telephony & internet in a multi-platform envrmt (UNIX, DOS, Windows) C++, RDBMS (Oracle or Informix), GUI dvlpmt tools (PowerBuilder or Visual Basic) & TCP/IP. Bachelors (any field) req'd. Respond by resume to: Sequel Communications, Inc., 3001 Hadley Rd., #7, S. Plainfield, NJ 07080.

**SOFTWARE ENGINEER** to provide on-site consultancy for design, analysis, development, testing and implementation of business and financial applications software on IBM AS/400 and Windows with PowerBuilder, Oracle/Sybase relational database systems for ODBC database management systems and Case tools Cool Plex and Cool 2E. Require: Bachelor (or equivalent) with major in Computer Science/Information Systems Analysis/Business Administration and two year's experience in the job offered or as Applications Consultant (three years of industry experience may be substituted for one year of college education). 50% travel to client sites within the United States required. Experience must include software development with Case tools Cool Plex and Cool 2E. Salary: \$85,000 per year, 8:30 am to 5:00 pm, 40 hours per week, M-F. Apply with resume to: Todd R. Wolff, Vice President, DP Solutions, Inc., 210 Interstate N. Parkway, Suite 700, Atlanta, GA 30339 (Attn: Job98RP).

**SENIOR SYSTEM PROGRAMMER/ANALYST** - Development of Internet websites to service subscriber transportation companies at remote locations. Development of customized software to service subscribers, in multi-platform, client-server environment. Administers MS SQL database server with improved persistence component. Integrates object-oriented databases. Must have BS degree in Electrical & Computer Engineering or a related field + 2yrs exp in the job offered or 2yrs exp as a Software Engineer incl min 6mo work exp in website design & website software development for multiplatform client server environment; & min 1yr database development for cross platform, networked systems. \$63,000/yr. 40 hrs/wk. M-F, 8am-5pm. Send resume to: Bureau of Workforce Program Support, PO Box 10869, Tallahassee, FL 32302-0869. Job Order #FL-1887953.

**SOFTWARE ENGINEER** to design, develop, test, implement, maintain and support GIS software systems for the emerging telecommunications industry in an object-oriented environment using C, C++, Java, Delphi, OLE automation, Active-X, MFC, API, MS-IIS, Visual Basic, JavaScript and ODBC on Windows 95/NT, UNIX and DOS operating systems; Write SQL procedures for data access against MS SQL Server and Oracle RDBMS; Develop multi-thread, parallel processing programs for data compression and image processing; implement ad-hoc on-line report system using Korn shell script, AWK and SAS. Require: M.S. degree in Computer Science, or a closely related field, with two years of experience in the job offered or as a Programmer/Analyst. Salary: \$60,000 per year, 8 am to 5 pm, M-F. Send resume to: Chris Amet, Director of Software Development, RoadTrac LLC, 250 Hembree Park Drive, Suite 112, Roswell, GA 30076; Attn: Job SWKY.

**PROGRAMMER ANALYST** to analyze, design, develop, test, implement, maintain and support software for business applications using C, Visual Basic, MS SQL Server, Oracle, Sybase and PowerBuilder under Windows 95/NT and UNIX environments. Require: B.S. degree in Computer Science, Management Information Systems, Business Administration or a closely related field with one year of experience in the job offered. Extensive paid travel on assignments to various client sites within the U.S. is required. Salary: \$60,000 per year, 8 am to 5 pm, M-F. Send resume to: Shrinivas P. Gangal, President, SYSPRO Technologies, Inc., 3091 Holcomb Bridge Road, Suite C-2, Norcross, GA 30071. Attn: Job SK.

**Lock Haven Univ of Penna.**, a member of the State System of Higher Education, is seeking applications for the following position: Information Resource Manager. Applicants must have a Bachelor's degree in Computer Science, Management Information Systems, or related technical area. Two years of experience with administrative information systems, systems analysis, and project management is required. Experience with UNIX administration and relational database management is required. Shell (csh & ksh), Perl, HTML, SQL, and C/C++ programming experience within a client/server environment is highly desirable. Other specialized training in areas of planning, database administration, data security, Web administration and financial accounting will be helpful. Experience with higher education administration is a plus.

Please send a resume and three professional references to Mr Gerald Easley, Asst. Director of Administrative Computing, Lock Haven University, Lock Haven, PA 17745-2390. Review will begin Jan. 4, 1999 and will continue until the position is filled. LHUP is an Equal Opportunity / Affirmative Action Employer, and encourages applications from minorities, women, veterans, and persons with disabilities.

**SOFTWARE ENGINEER** to analyze, design, develop, test, implement, support and maintain GIS and spatial navigation systems in object-oriented environment using OLE automation, client/server and ActiveX technologies on Windows 95/NT, DOS and UNIX operating systems with programming tools Visual FoxPro, Visual Basic, C/C++, COBOL, HTML and Delphi; perform optimization algorithms for spatial analysis by applying statistical modeling theories and heuristic search techniques using advanced object-oriented technologies and SAS, analyze, design, develop and maintain data models on MS SQL Server and develop stored procedures using Transact SQL. Require: Master's degree in Computer Science or Management Information Systems and one year's experience in the job offered or as Programmer/Analyst. Salary: \$60,000 per year, 40 hours/week, 8 am to 5 pm, M-F. Apply with resume to: Christopher D. Amet, Director of Software Development, RoadTrac, LLC, 250 Hembree Park Drive, Suite 112, Roswell, GA 30076 (refer to Job No. SWHC).

**System Project Analyst** - Needed to serve as subject matter expert on assigned applications; use SQL to design, develop, test, implement, support and document new and existing client/server applications in the UNIX and/or Windows95 NT environment; work with internal clients to develop specifications for application of information technology; provide support for UNIX system. Req. MS or equivalent experience in CS/CIS, MIS, or Management (ITM). At least six mos. Exp. in job offered or in CS or CIS area. Prof. in SOL Database, UNIX and Windows 95 NT. Mon. - Fri. 8:30-5:00, overtime as needed. Comparable salary. To respond, send resume and transmittal letter to: Polly Schanck, Room 170, 59 Executive Park South, Atl. GA 30329, Fax (404)982-6943. EOE

**Programmer Analyst** wanted by IT Co. in Atlanta, GA. Must have 2 yrs exp as Programmer Analyst or as Systems Analyst or S/ware Engr. Bachelors or equiv in Comp Sci, Electrical or Electronic Engg or related field of engg reqd. Respond by resume to: HR Dept, Sun Plus Data Group, Inc, 3783 Presidential Pkwy, Ste 130, Atlanta, GA 30340.

**System Network Specialist** wanted by Computer Co. in Manhattan. Must have 1 1/2 yr exp in comp. system & n/work planning, dsngn, installation, testing & user training for Japanese corporate clients and project mgmt for n/work & internet home page dvlpmt for Japanese Cos. Bachelors w/any major req'd. Respond to: HR Dept, Grace Bldg, 1114 Ave. of the Americas, 30th Flr, New York, NY 10036.

**Computational Linguist/Software Engineer** wanted to develop natural language processing software incl. computer-assisted language translation, multi-lingual glossary management, etc. by using Microsoft Visual C++ & Lisp; software localization tool development using C++ & Java; software localization & internationalization, incl. double-byte enabling, & Unicode processing in software developed in C/C++ & Java; development & maintenance of software that supports MS Windows binary files in ForeignDesk developed in C++; development of an advanced corporate database to manage info. by using Java, C++ & RDBMS system; provide tech. assistance to other staff members on char. encoding, double-byte & natural language processing issues. Must have Bach. Deg. in Comp. Sci., 1 yr. exper. in natural language processing & language info. processing tech., incl. exper. with Java, Lisp, C/C++ & RDBMS; familiarity with Prolog; & expertise in Unicode & Double-Byte Encoding. Salary \$62,545/yr. Send two (2) resumes to Case #80175, P.O. Box 8968, Boston, MA 02114.

**SENIOR SOFTWARE ENGINEER** to Design, develop, implement, test, maintain and support application software using COBOL II, JCL, VSAM, CICS, NATURAL, EZTRIEVE PLUS, FILEAID, TSO/ISPF, ADABAS, ROSCOE, CA7, SERVICE CENTER, INFOMAN, ENDEVOR, EXPEDITOR, SYSVIEW, REFLECTIONS and LOTUS NOTES on OS390 mainframe machine running under the MVS/ESA operating system; Provide support/enhancement for existing systems, as well as on-call problem management and resolution. Require: Bachelor's degree in Management Information Systems, or a closely related field, with two years of experience in the job offered or as a Programmer/Analyst. Salary \$59,735.30 per year, 8 am to 5 pm, M-F. Send resume to: Cartrell Kelson-Jackson, HR Manager, Choice Point Inc., 1000 Alderman Drive, Alpharetta, GA 30005; Attn: Job KR.

**Interbus Applications Eng.** - Prov. services to clients re; proprietary INTERBUS systems; dev., implement, troubleshoot, & support INTERBUS products at co. locations & customer sites thru-out the U.S., Canada, & No. & So. America; translate German documents/programs into English & provide tech. support to marketing dept. by proof reading market documentation before release to ensure product specs are quoted correctly for controlled boards & INTERBUS software products; dev. training materials & coord. info. flow between U.S. & overseas offices to improve customer support & internal knowledge on the INTERBUS system; write user example programs, using C, Visual C & WindowsNT \$59,000/yr. 40 hrs/wk. B.S. or equiv. in Electrical or Electronics Engr. & 2 yrs. exp. req'd. Must speak, read, & write German lang. Submit resume to HR Mgr, Phoenix Contact, Inc., 586 Fülling Mill Rd., Harrisburg, PA 17057

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**RPG/400 Senior Software Engineers.** Develop & direct software sys testing procedures, programming & documentation for complete RPG software program applications. Req. MS in technical field (comp. sci, IT, math, engineering, physics, etc) & 2 yrs exp as a developer or tech leader or a BS in a technical field & 5 yrs exp as a developer or tech leader. Exp. to include at least 6 mths with full life cycle development using RPG/400. \$60k & up depending on exp.

**P.K.M.S Implementation Consultants.** Coordinate client projects & interact with all levels of client's organization. Evaluate client bus. operations & sys environs to implement proprietary software sys. Advise & design sys test plans. Assist in development of test & production environs at client sites. Assist in development of proposals & supports for sales presentations. Substantial travel req. BS in a technical field (comp. sci, IT, math, engineering, physics, etc) \$40k up depending on exp.

**UNIX Systems Administrator.** Configure, install, maintain, & support hardware & software for high availability Unix system. Troubleshoot & resolve sys problems as well as monitor & tune as req. Evaluate sys growth & provide capacity planning & performance analysis. Provide tech assistance to application developers, dba's, consultants. Design, implement & management Firewall & security architecture. Firewall DNS, SMTP email server, relays, application level proxy & network services including DNS (V4 & V8), DHCP, Proxy NFS, TCP wrappers, RAI or TACACS+, SSH & security & authentication. Req MS in a technical field (comp. sci, IT, math engineering, physics, etc) & 2 yr. exp. in network sys admin or engineering, admin, programming or support. Exp in UNIX administration & systems administration. AIX Digital Unix Solaris FreeBSD \$60k up depending on exp. Resumes to J. Lundy, Manhattan Associates, Inc., Windy Ridge Pkwy, North Atlanta GA 30054

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Software engineer with 18 months of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis requiring supervision of other computer professionals, with 18 months of experience using SAP R/3, ABAP/4, HP9000 and Unix. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. \$60,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 7044103 to: Mr. Tom Dembosky, Manager, Indiana Job Center, 350 N. Fourth Street, Indiana, PA 15701.

Software Engineer: Design, develop and analyze software systems to determine feasibility of design and directs software testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have 2 years as a computer professional and 1 year of experience using BaaN and Oracle applications in an UNIX environment. Masters degree in one of several limited fields: Computer Applications, Technology, Engineering, Math or Physics. Salary is \$95,000 per/yr., 40 hrs/wk, 9 am - 5 pm. Please submit resumes to: Ms. Charlene Cogley, Mgr., Beaver Falls Job Ctr., 2103 Ninth Avenue, Beaver Falls, PA 15010. Job Order Number 8044557.

Software Engineer: Design, develop and analyze software systems to determine feasibility of design and directs software system testing procedures, programming and documentation. Work involves extensive travel and frequent relocation. Must have 2 years of experience using SAP R/3/ABAP. Masters degree in one of several limited fields: Computer Science, Engineering, Math or Physics or B.S. and 5 years of experience as a computer professional. Salary is \$160,000 per/yr., 40 hrs/wk., 9 am - 5 pm. Please submit resumes to: Mr. Terry Kinney, Mgr. Armstrong County Job Center, 1270 N. Water Street, PO Box 799, Kittanning, PA 16201; Job Order Number 8044345.

Manager of Computer Operations: Direct and coordinate activities of workers engaged in computer operations; adjusts hours of work, priorities, and staff assignments to ensure efficient operation, based on work load. Develops budget and monitors expenditures. Plans and develops policies and procedures for carrying out computer operations. Knowledge of software consultancy industry. Work involves extensive travel and frequent relocation. Must have at least three years of experience with: Windows, C++, Powerbuilder and UNIX. Must possess three years of experience as a computer professional, and a Master's degree in one of several limited fields: engineering, mathematics, computer science or physics. Salary is \$100,000 per/yr., 40 hrs/wk., 9:00 - 5:00 p.m. Please submit resume to: Mr., Duane M. Brentzel, Mgr., Greensburg Job Center, 599 Sells Lane, Greensburg, PA 15601: Job Order No.: 2022433.

Software engineer with 5 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, requiring supervision of other computer professionals, with 5 years of experience using Internet, Unix, IRIX, and TCP/IP. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in one of several limited fields: engineering, mathematics, computer applications or physics. \$58,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 7044101, to: Ms. Charlene Cogley, Manager, Beaver Falls Job Center, 2103 Ninth Avenue, Beaver Falls, PA 15010.

Business Administration Manager with 1 year of experience, or with 1 year of experience as a Business Consultant Professional, who will direct and coordinate activities through subordinate supervisory personnel, concerned with computer consulting services. Prepares budgets, coordinates project activities according to cost and business constraints, develops new accounts and maintains current accounts using SAS, SYSTAT, MS Excel, and MS Word. Course work in accounting, finance, management and marketing. \$60,000/yr. 40 hours/wk., 9:00 am-5:00 pm. Send resumes, listing job order 8044203 to Mr. Richard Introcaso, Manager, Beaver County Job Center, 120 Merchant Street, Ambridge, PA 15003.

PROGRAMMER ANALYST: Analyzing, designing, developing, testing, debugging, documenting and maintaining application systems. Provide application and system support and enhancement. Requires: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or foreign equivalent. \$42,845/yr., 40 hrs./wk., 8am-5pm, M-F. Send resume to 7310 Woodward Ave., 4th Floor, Detroit, MI 48202 & include Ref.#: 113097. Employer Paid Ad.

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Software engineer with 3 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 3 years of experience using MS SQL Server, MFC, TCP/IP, and GUI. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in one of several limited fields: engineering, mathematics, computer applications or physics. \$55,300/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 2022268, to: Mr. Duane M. Brentzel, Manager, Greensburg Job Center, 599 Sells Lane, Greensburg, PA 15601.

Software engineer with 18 months of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 18 months of experience using SAP R/3. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. \$250,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 6022127, to: Law Office Manager, Mon Valley Job Center, 345 Fifth Avenue, McKeesport, PA 15132.

Software Engineer: Designs, develops, and analyzes software systems to determine feasibility of design and directs software testing, procedures, programming and documentation. Must have two years of experience using: Oracle RDBMS, SQL Forms SQL Reports, and Pro\*C. Masters Degree in one of several limited fields: Engineering, Computer Applications, Math or Physics. Salary is \$65,000 per/yr., 40 hrs/wk., 9:00-5:00 p.m. Please submit resumes to: Local Office Mgr., Mon Valley Job Center, 345 Fifth Ave., McKeesport, PA 15132; Job Order No.: 8044543.

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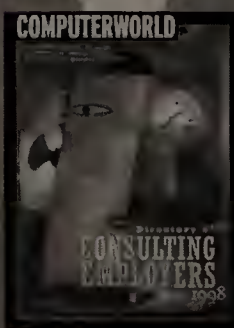
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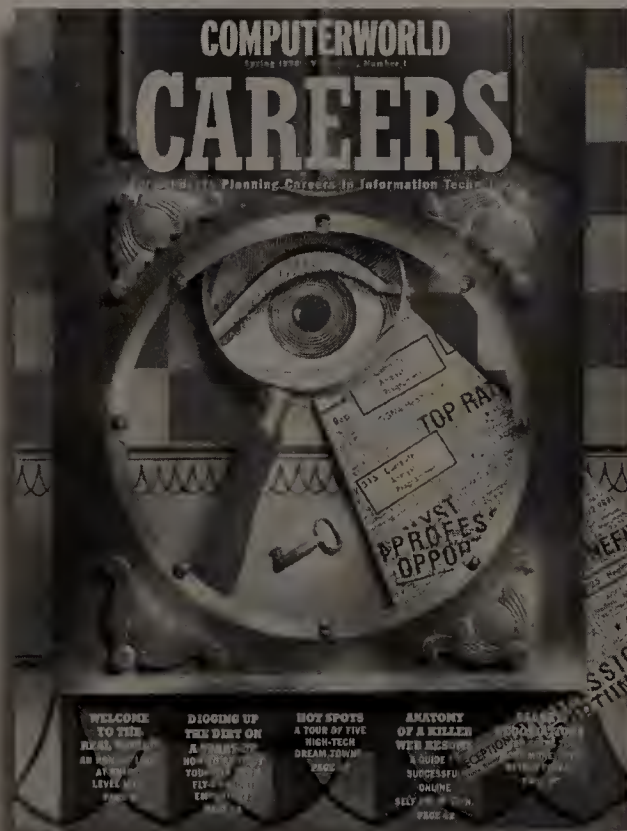
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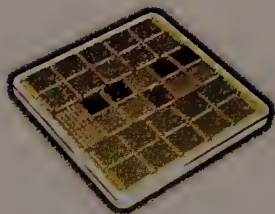
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# The Week in Stocks

## Gainers



## Losers



### PERCENT

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Amazon.Com (H) .....	30.9	CBT Group Plc. ....	-15.3
Winstar Communications Inc. ....	27.3	Xylan .....	-14.0
National Data .....	19.3	Platinum Technology Inc. ....	-11.2
Acxiom Corp. ....	17.8	Network General .....	-10.7
Open Text Corp. ....	17.2	Hughes Electronics/GM .....	-10.7
Documentum .....	15.6	Psinet .....	-10.3
America Online (H) .....	15.1	Peoplesoft Inc. (L) .....	-10.3

### DOLLAR

Amazon.Com (H) .....	67.44	Network General .....	-4.06
Yahoo! Inc. ....	20.38	Hughes Electronics/GM .....	-4.06
America Online (H) .....	13.69	Autodesk Inc. ....	-3.81
Lexmark International Group (H) .....	8.63	Storage Technology .....	-3.56
Nokia Corp. (H) .....	8.56	Pixar .....	-3.00
Winstar Communications Inc. ....	8.44	Computer Associates Int'l Inc. ....	-2.81
Linear Technology .....	8.28	Affiliated Computer Servs .....	-2.63
Sgs-Thomson Microelectronics .....	7.06	Xylan .....	-2.56

## INDUSTRY ALMANAC

### Cabletron up for grabs?

It didn't shock too many people when Cabletron Systems Inc. (NYSE:CS) earlier this month announced it would post a loss of about \$16 million for the quarter ended Nov. 30. Sure, some Wall Street analysts had said the Rochester, N.H.-based networking vendor might show a small profit, but it would have been only the second quarterly profit for Cabletron in the past year.

Cabletron's stock price now hovers below \$10 (see chart), down from a 52-week high of 16-3/8 in February.

"I think in order for them to survive, they have to hook up with someone, and ultimately, someone will look at them for the right price," said Matthew Barzowskas, an analyst at First Albany Corp. in New York. He suggested that would be approximately \$2.5 billion. The backbone routing technology Cabletron acquired last January (by purchasing Yago Systems Inc.) along with its own Internet Protocol and data capabilities could fill many large vendors' wish lists, Barzowskas said.

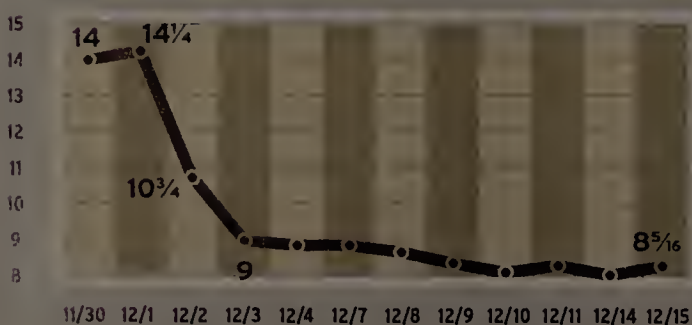
Cabletron's troubles stem from a small product line, according to Paul Weinstein, an analyst at Credit Suisse First Boston Corp. in San Francisco. "They just don't have the product breadth that their competitors can offer, and their stock price is down, so they can't really buy their way out of this," he said.

"Customers these days are looking more for full system solutions . . . , so Cabletron has a hard time competing with Cisco [Systems Inc.] or 3Com [Corp.]," Barzowskas agreed.

Paul Johnson, an analyst at BancAmerica Robertson Stephens in New York, said Cabletron could be an attractive target because of its customer list and the Layer 3 switching it picked up from Yago. "The Yago products have great architecture, they're very fast and are at a great price," he said. "For a company looking for an easy way into the enterprise space, they could easily buy Cabletron and its enterprise customer base for not very much money." — Stewart Deck

### TOUGH TIMES

Cabletron's recent announcement of poor earnings sent its stock tumbling more than 35% Dec. 1-3



EXCH 52-WEEK RANGE DEC. 18 WK NET 2PM Wk PCT CHANGE CHANGE

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AOSK	50.06	21.62	AUTODESK INC.	39.06	-3.81	-8.9
AVID	47.75	11.06	AVID TECHNOLOGY	21.44	-1.06	-4.7
BOOL	34.87	16.00	BOOLE & BABBAGE INC.	31.00	1.13	3.8
CON	39.00	19.12	CADENCE DESIGN SYSTEMS	27.63	0.63	2.3
CBTSY	63.87	6.68	CBT GROUP PLC.	13.88	-2.50	-15.3
CHKPF	47.75	10.87	CHECKPOINT SOFTWARE TECH. LTD.	38.88	3.63	10.3
CTXS	90.75	36.37	CITRIX SYSTEMS INC.	86.69	3.69	4.4
COGNF	30.50	14.75	COGNOS INC.	18.06	-1.06	-5.6
CA	61.93	26.00	COMPUTER ASSOCIATES INT'L INC.	39.25	-2.81	-6.7
CPWR	69.00	29.62	COMPUWARE CORP. (H)	69.00	2.44	3.7
OCTM	59.62	16.75	DOCUMENTUM	45.81	6.19	15.6
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IDXC	55.75	30.00	IOX SYSTEMS	48.13	3.50	7.8
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GSTRF	37.12	8.31	GLOBALSTAR TELECOM. LTD.	18.94	0.50	2.7
GTE	67.43	46.56	GTE CORP.	66.81	3.06	4.8
NXTL	34.12	15.37	NEXTEL COMMUNICATIONS	21.69	-0.13	-0.6
SPOT	66.12	26.50	PANAMSAT	37.44	0.78	2.1
QCOM	66.00	37.75	QUALCOMM	50.88	-0.50	-1.0
SBC	51.00	35.00	SBC COMMUNICATIONS	49.06	-0.13	-0.3
FON	82.12	48.25	SPRINT CORP.	80.00	-1.75	-2.1
TCOMA	50.75	26.25	TELECOMMUNICATIONS (H)	50.69	3.13	6.6
TOS	50.12	30.62	TELEPHONE AND DATA SYSTEMS	42.25	-2.13	-4.8
USW	64.50	43.37	US WEST	60.75	-0.63	-1.0
VIA	69.37	35.68	VIACOM	68.44	0.69	1.0
WCII	48.12	10.25	WINSTAR COMMUNICATIONS INC.	39.31	8.44	27.3
WCOM	67.25	28.50	WORLDCOM INC. (H)	67.25	3.94	6.2

### Services

### UP 2.3%

ACXM	28.25	15.37	ACXIOM CORP.	26.94	4.06	17.8
ACS	41.50	22.37	AFFILIATED COMPUTER SERVS	38.31	-2.63	-6.4
AMSY	36.00	18.75	AMERICAN MGT. SYSTEMS (H)	34.50	-1.06	-3.0
AUO	84.31	54.12	AUTOMATIC DATA PROCESSING	77.50	1.06	1.4
BSYS	51.87	31.00	BISYS GROUP, INC.	49.75	-0.31	-0.6
CATP	58.37	13.37	CAMBRIDGE TECHNOLOGY PTRNS	21.88	0.50	2.3
CEN	69.87	43.50	CERIDIAN (H)	68.88	3.19	4.9
CBR	40.87	13.31	CIBER INC.	23.25	1.63	7.5
CDO	23.25	12.43	COMDISCO	15.19	-1.69	-10.0
CHRX	53.50	17.25	COMPUTER HORIZONS CORP.	20.50	-1.88	-8.4
CSC	74.87	39.00	COMPUTER SCIENCES	68.25	2.88	4.4
DST	70.56	34.00	OST SYSTEMS INC.	58.75	3.94	7.2
EOS	50.87	30.43	ELECTRONIC DATA SYSTEMS	46.00	3.13	7.3
FOC	36.06	19.68	FIRST DATA GROUP	28.63	2.63	10.1
FISV	49.37	28.37	FISERV	46.69	1.06	2.3
IT	41.75	17.51	GARTNER GROUP	19.81	-0.88	-4.2
HBOC	38.37	20.56	HBO & CO.	25.13	-0.50	-2.0
KEA	60.93	24.75	KEANE	31.00	-0.63	-2.0
NOC	46.00	26.18	NATIONAL DATA	43.31	7.00	19.3
PAYX	55.06	27.18	PAYCHEX, INC.	49.38	1.00	2.1
REGI	31.75	5.37	RENAISSANCE WORLDWIDE (L)	5.94	-0.66	-10.0
REY	24.00	12.62	REYNOLDS & REYNOLDS	22.06	0.81	3.8
SFE	45.37	17.12	SAFEGARD SCIENTIFICS	26.00	-1.25	-4.6
SAPE	62.00	24.25	SAPIENT CORP.	51.31	6.50	14.5
SMS	86.50	40.06	SHARED MEDICAL SYSTEMS	50.69	0.38	0.7
SOS	40.00	21.68	SUNGARD DATA SYSTEMS	35.06	3.00	9.4
SYNT	32.62	8.68	SYNTEL INC.	19.19	-0.75	-3.8
TECD	53.12	33.75	TECH DATA	42.00	1.00	2.4
TSS	23.93	14.43	TOTAL SYSTEM SERVICES, INC	22.63	0.00	0.0
TSAI	43.50	27.06	TRANSACTION SYS. ARCHITECTS	42.75	2.75	6.9

### Network

### UP 1.1%

COMS	47.25	22.93	3COM CORP.	45.25	1.38	3.1
ADCT	43.62	15.75	AOC TELECOMMUNICATIONS INC.	29.81	2.19	7.9
ANTC	25.00	10.37	ANTEC	16.31	-0.81	-4.7
ASNO	65.00	23.25	ASCEND COMMUNICATIONS INC.	61.19	0.56	0.9
BNYN	13.37	2.12	BANYAN SYSTEMS INC.	8.25	0.97	13.3
CS	17.12	6.62	CABLETRON SYSTEMS	9.00	0.63	7.5
CNEBF	20.00	5.75	CALL-NET ENTERPRISES	8.75	0.13	1.4
CSO	89.06	33.50	CISCO SYSTEMS INC. (H)	89.06	6.31	7.6
ECILF	40.31	19.75	ECI TELECOM	36.13	-1.38	-3.7
FORE	28.00	9.25	FORE SYSTEMS INC.	19.75	2.06	11.7
HRS	55.31	27.56	HARRIS CORP.	36.94	0.44	1.2
GMH	57.87	30.37	HUGHES ELECTRONICS/GM	33.88	-4.06	-10.7
ERICY	34.00	15.00	LM ERICSSON	21.81	-0.13	-0.6
LU	108.50	36.68	LUCENT TECHNOLOGIES	98.44	1.69	1.7
MADGF	7.75	1.75	MADGE NETWORKS	3.63	-1.16	-24.2
NCDI	13.75	4.37	NETWORK COMPUTING DEV	5.38	0.00	0.0
NWK	20.62	8.00	NETWORK EQUIPMENT TECH.	11.19	-0.06	-0.6
NN	39.18	15.43	NEWBRIDGE NETWORKS	27.50	-0.88	-3.1

EXCH 52-WEEK RANGE DEC. 18 WK NET 2PM Wk PCT CHANGE CHANGE

NOKA	117.12	31.52	NOKIA CORP. (H)	116.25	8.56	8.0
NT	69.25	26.81	NORTHERN TELECOM. LTD.	47.13	1.38	3.0
PAIR	24.37	6.00	PAIRGAIN TECHNOLOGIES INC.	8.03	0.41	5.3
PCITL	11.93	4.75	PICTURETEL	6.75	0.69	11.3
SFA	27.93	11.75	SCIENTIFIC ATLANTA	21.25	1.13	5.6
SHVA	14.37	2.75	SHIVA	5.75	0.00	0.0
TLAB	93.12	31.37	TELLABS INC.	65.19	-0.31	-0.5
USW	64.50	43.37	US WEST	60.75	-0.63	-1.0
VRK	11.18	2.87	VERILINK	3.75	0.00	0.0
WSTL	15.25	2.75	WESTELL TECHNOLOGY INC.	5.19	0.25	5.1
XYLN	31.31	9.62	XYLAN	15.69	-2.56	-14.0

### Semiconductors, Chips & Equipment

### UP 4.3%

ADPT	41.37
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# Companies in this issue

Page number refers to page on which story begins. Company names can also be searched at [www.computerworld.com](http://www.computerworld.com).

Aberdeen Group Inc. ....1, 14	Carnival Corp. ....71	EToys Inc. ....41	International Data Corp. ....1, 4, 16,	New York Stock Exchange .....37	Silicon Graphics Inc. ....14, 47
Active Software Inc. ....14	Casio Soft Inc. ....55	Evans & Sutherland .....14	Internet Fashion Mall LLC .....47, 55, 87	Niro Inc. ....47	Simon, Kucher & Partners LLC .....65
Acuity Corp. ....41	CDNow Inc. ....41	Excell Data Corp. ....21	Inventa Corp. ....20	Nokia Corp. ....49	Source Data Systems .....24
Amazon.com Inc. ....41	Cessna Aircraft Co. ....60	Excite Inc. ....68	IP&D .....32	Nokia Display Products Inc. ....57	SourceFile .....58
Amdahl Corp. ....49	Charles Schwab & Co. ....20	Exxon Corp. ....1	J&R Electronics Inc. ....41	Nortel Inc. ....16	Spectra Logic Corp. ....14
America Online Inc. ....1, 8, 12	Chevron Co. ....48	Federal Express Corp. ....1, 12	J. C. Penney Co. ....37	North American Aerospace	Sprint Corp. ....6
American Stock Exchange .....37	Cincinnati Insurance Co. ....24	Federated Stores Inc. ....37	J. D. Edwards & Co. ....37, 50	Defense Command .....88	Squadron, Ellenoff, Plesent
AmeriServe Inc. ....55	Cisco Systems Inc. ....12, 16, 47, 84	Ferris Research Inc. ....48	J. P. Morgan & Co. ....41	Northern Telecom Ltd. ....1	& Sheinfeld LLP .....8
Amoco Corp. ....1, 58	Citigroup Inc. ....6	First Albany Corp. ....84	Jefferies & Co. ....55	Norwest Financial Inc. ....47	Staples Inc. ....12
AMR Research Inc. ....1	City Holding Co. ....6	First American National Bank .....20	Jupiter Communications Inc. ....1	Norwest Financial Information	Strategic Research Corp. ....49
Analytical Graphics Inc. ....88	Clarus Corp. ....49	Florida Atlantic University .....71	Kana Communications Inc. ....47	Services Group Inc. ....47	Sun Microsystems Inc. ....4, 6, 8, 14, 29
Andersen Consulting .....87	ClickNet Software Corp. ....86	Florida Council of the American	Kennedy Space Center .....71	Novell Inc. ....12, 49	Syntax Inc. ....47
Animation House Inc. ....14	CNF Transportation Inc. ....1	Electronics Association .....71	KFC Corp. ....55	NSTor Corporation Inc. ....57	Taco Bell Corp. ....55
Apple Computer Inc. ....49, 55	Coca-Cola Co. ....20	Ford Motor Co. ....64	Knox Software USA .....14	ObjectSpace Inc. ....12	Talbots Inc. ....37
Ascend Corp. ....12	Comed Central .....10	Forrester Research Inc. ....20, 37	KPMG Consulting .....20	Oblix Inc. ....12	Tandem Computers Inc. ....25, 37
Atec Group Inc. ....4	Compaq Computer Corp. ....9, 14, 55	Fried, Frank, Harris & Jacobson .....8	KPMG Peat Marwick LLP .....21	Oracle Corp. ....1, 4, 49, 50, 56	Tatung Science & Technology Inc. ....57
Autodesk Inc. ....68	Computer Associates	Frost & Sullivan .....1	KPMG Tool Group Inc. ....1	Orbital Technologies Inc. ....12	The Dow Chemical Co. ....10
Automotive Industry Action Group .....60	International Inc. ....87	Fujitsu PC Corp. ....20	Legato Systems Inc. ....14	OSF Inc. ....37	The Home Depot Inc. ....1, 14, 86
Avant Corp. ....12	Computer Sciences Corp. ....16	Galarath Inc. ....37	Lucent Technologies Inc. ....1, 8	Ovum Ltd. ....1	The IAMS Co. ....68
Aventura Systems .....87	Concord Communications Inc. ....17	Garden Escape Inc. ....1	Mantha Software Inc. ....41	PacificCorp .....60	Tommy Hilfiger .....37
AVT Corp. ....1	Connectix Inc. ....41	Gartner Group Inc. ....1, 14, 20	McDonald's Corp. ....58	Peace Software .....20	Tower Group .....6
Baan Co. ....1, 64	Continental Grain Co. ....9	GEA AG .....47	General Motors Corp. ....60, 64	Pedestal Capital Inc. ....6	Toys R Us Inc. ....37
BackWeb Technologies Inc. ....51	Credit Suisse First Boston Corp. ....84, 86	General Motors Corp. ....60, 64	Giga Information Group .....10, 16, 86	PeopleSoft Inc. ....49, 50, 64	Travelers Corp. ....6
Bain and Co. ....65	Cybershop International Inc. ....41	Giga Information Group .....10, 16, 86	Goldberg, Kohn, Bell, Black,	PeopleSupport Inc. ....41	Trilogy Software Inc. ....65
Ball-Foster Glass Container Corp. ....4	D. H. Brown Associates Inc. ....14	Goldberg, Kohn, Bell, Black,	Rosenbloom & Moritz Ltd. ....8	PlanetRx Inc. ....21	Ultraprise Corp. ....6
BancAmerica Robertson Stephens .....84	Daiwa Securities America Inc. ....14	GoldTouch Technologies Inc. ....8	GoldTouch Technologies Inc. ....8	Plymouth Rock Assurance Corp. ....21	Union Camp Corp. ....50
BankAmerica Corp. ....6	Data Warehousing Institute .....21	Gomez Advisors Inc. ....20	Gomez Advisors Inc. ....20	Progressive Insurance Co. ....65	United Air Lines Inc. ....47, 65
BankBoston Corp. ....20	Dataquest .....21	Goodyear Tire & Rubber Co. ....20	Gordon & Glickson PC .....8, 58	Proma Creative Solutions Ltd. ....37	USDev Inc. ....20
Barclays Global Investment NA .....1, 86	Deere & Co. ....60	Gould Tire & Rubber Co. ....20	Gould & Glickson PC .....8, 58	Prudential Insurance	Value America Inc. ....55
Barnes & Noble Inc. ....37	Dell's Inc. ....41	Gould Evans Goodman Associates .....68	Gould Evans Goodman Associates .....68	Company of America .....86	Veritas Software Corp. ....14
Barrington Research Associates Inc. ....1	Dell Computer Corp. ....14, 55	Great Lakes Cheese Co. ....37	Great Lakes Cheese Co. ....37	Pfizer Inc. ....49	VF Corp. ....1
Barsa Consulting LLC .....4	Deloitte Consulting Group .....60	GTE Corp. ....1	GTE Corp. ....1	Putnam-Greene Financial Corp. ....24	Wal-Mart Stores Inc. ....37
Bell Communications Research Inc. ....1	Deutsche Bank Securities .....42, 60	Hallmark Cards Inc. ....6	Hallmark Cards Inc. ....6	Radioson Hotels Worldwide .....58	Walgreen Co. ....1
BellSouth Corp. ....49	Digital Equipment Corp. ....14, 25, 37	Hartford House Ltd. ....8	Hartford House Ltd. ....8	Real Networks Inc. ....8	Workgroup Strategic Services Inc. ....9, 55
Benchmarking Partners Inc. ....1	DMR Consulting Group Inc. ....1	Harvard Law School .....60	Harvard Law School .....60	Reel.com Inc. ....41	Wurlitzer .....64
Best Buy Co. ....37	Dollar Bank .....86	Hawlett-Packard Co. ....9, 14, 41	Hawlett-Packard Co. ....9, 14, 41	Richard Wonder & Associates .....68	Wyeth-Ayerst Laboratories Inc. ....9
Blue Mountain Arts .....41	Dow Corning .....12	IBM .....1, 4, 8, 9, 10, 12, 21,	IBM .....1, 4, 8, 9, 10, 12, 21,	Roberts Express Inc. ....10	Xerox Corp. ....60
Booz Allen & Hamilton Inc. ....4	Downing, Thorpe & James .....14	IBM Global Services .....86	IBM Global Services .....86	Rubin Systems Inc. ....86	Xiotech Corp. ....49
BrainPlay.com Inc. ....41	Drugstore.com .....1	IBM Illuminata Inc. ....25	IBM Illuminata Inc. ....25	S3 Inc. ....12	Yago Systems Inc. ....84
Brio Technology Inc. ....21	DSI Technology Escrow Services Inc. ....50	Imation Corp. ....55	Imation Corp. ....55	Saab Cars USA Inc. ....4	Yahoo Inc. ....41
British Columbia Gas Co. ....20	Dun & Bradstreet Inc. ....50	Infinium Software Inc. ....37	Infinium Software Inc. ....37	Salant Corp. ....58	Yankee Energy System Inc. ....60
Brown Brothers Harriman .....6, 37	E. A. Winning Associates Inc. ....68	Infoliant Corp. ....86	Infoliant Corp. ....86	Salomon Smith Barney .....6	Zia New Mexico Bank .....24
Bruno Magli USA .....12	EBay Inc. ....41	Information Management Forum .....60	Information Management Forum .....60	SAP AG .....1, 12, 20, 49, 50, 64	
Burger King Corp. ....55	Elron Software Inc. ....86	Insignia Solutions PLC .....41	Insignia Solutions PLC .....41	Securities Industry	
Burton Snowboards .....68	EMC Corp. ....49	Insite Services LP .....20	Insite Services LP .....20	Automation Corp. ....37	
Cabletron Systems Inc. ....16, 84	EnCommerce Inc. ....12	Intergraph Corp. ....14	Intergraph Corp. ....14	Sendmail Inc. ....48	
Cadence Design Systems Inc. ....12	Enron Corp. ....20	Intel Corp. ....12, 14, 55, 56	Intel Corp. ....12, 14, 55, 56	Sequent Computer Systems Inc. ....47	
Cambridge Technology Partners Inc. ....21	Ericsson AB .....49				
Cardservice International .....47	Ernst & Young LLP .....21				
Carlson Hospitality Group Inc. ....58	EShare Technologies Inc. ....41				



# Vendors try year 2000 databases

► Users say information adequate for non-mission-critical testing

By David Orenstein

COMMERCIAL CLEARINGHOUSES of year 2000 compliance information can save users time, but they don't replace testing and might not help users any more than freely available databases can.

"We think it's good enough for the non-mission-critical stuff," said Jim Duggan, an analyst at Gartner Group Inc. in Stamford, Conn. The databases may not contain enough detail and are only as good as the information vendors give out. Sometimes vendor information is inaccurate.

## VENDOR ACTIVITY

Recently, two major vendors have licensed databases, and a third was launched:

■ Last week, Hewlett-Packard Co. announced a partnership with ClickNet Software Corp. in which HP resellers will provide

year 2000 services for desktops. ClickNet's year 2000 tools include a proprietary database of compliance information about 10,000 products.

■ Also last week, Elron Software Inc. in Cambridge, Mass., announced the availability of its Year 2000 Knowledgebase, which tracks the compliance of 16,500 products and distributes the information over the Internet.

■ Earlier this month, Pittsburgh-based Infoliant Corp. licensed to IBM Global Services its Network Advisor online database on the compliance of 20,000 products.

Pricing for the services and tools varies, but Infoliant, for example, charges between \$2,800 and \$5,000 for subscriptions.

Infoliant's service has helped Dollar Bank, also based in Pittsburgh, save time and prevent problems from occurring, ac-

cording to David Rellis, a vice president at the bank. Network Advisor provides information in a helpful, standard format, Rellis said. It also alerts users to updates on the changing compliance status of products.

The Home Depot Inc. in Atlanta also has been satisfied with free external databases operated by the U.S. Army and Electronic Data Systems Corp., but it hasn't paid for the information. Instead, said Ron Kerr, senior manager of information services, it has consulted free sites operated by the U.S. Army and EDS. Meanwhile, Barclays Global Investments NA in San Francisco has used the internal database of DMR Consulting Group Inc. in Edison, N.J., which it hired to help with desktop remediation, and kept its own database of compliance information, said Doug Bowman, a consultant working for DMR. □

## MILLENNIUM CRISIS

# Global Y2K 'Peace Corps' proposed

By Thomas Hoffman

A RENOWNED information technology consultant has proposed an intriguing approach to helping wayward nations play catch-up on their year 2000 projects: create a "Peace Corps" of experts who can share their knowledge with national year 2000 coordinators for free.

Though it is seen as a noble idea, Howard Rubin's recent proposal to the United Nations and President Clinton's Y2K czar, John Koskinen, faces obstacles. Year 2000 experts lauded the approach, but they acknowledged privately that they are bound to solving their companies' millennium crises.

## TIME CRUNCH

"It's a wonderful concept, but I'm not sure how much time it would take to get this off the ground," said Ann Coffou, managing director for the year 2000 practice at Giga Information Group in Norwell, Mass. Still, she said that if the program was organized properly, Giga's analysts "would want to look into it."

In an E-mail, Koskinen said the U.S. is considering how it might be supportive.

One way to make it work, said Rubin ([howard\\_rubin@compuserve.com](mailto:howard_rubin@compuserve.com)), president of Rubin Systems Inc. in Pound Ridge, N.Y., is to share best practices through written communications, videos and teleconferencing sessions. That could help because the year 2000 problem "is the one and only project that has pulled a lot

don't have a lot of legacy systems to deal with," said Dec, who added that Prudential "will look to see what we can do" to help them.

Some industry groups have already made some progress. The Securities Industry Association (SIA) in New York, for example, has reached an agreement with Russia to send year



**Howard Rubin's idea is to share best practices for year 2000 remediation among nations through written communications, videos and teleconferencing sessions.**

of companies and countries together," said Irene Dec, year 2000 program director at Prudential Insurance Company of America in Newark, N.J.

One way to offer assistance to underdeveloped nations, Dec said, is to provide them with the same kinds of year 2000 tool kits that Prudential and other companies have been providing to small businesses. "Technology is new to many of the countries that need help, so they

2000 programmers and practitioners to help Russian investment banks and other financial services firms work on their year 2000 projects, according to Mike Tiernan, vice president of IT at Credit Suisse First Boston Corp. in New York and chairman of the SIA year 2000 committee.

The effort, Tiernan said, "is not so much about feeling good about ourselves but rather to help our industry." □

How are you addressing your desktop PC year 2000 problem?



- Doing work in-house
- Hiring consultants/outourcing
- Combination of both

Base: 102 IT managers at companies with 100 or more employees

Source: Computerworld Information Management Group, Framingham, Mass.

What is your company's status on year 2000 desktop issues?



- Fixing the problem
- Conversion completed
- Didn't have a year 2000 desktop problem
- Evaluating problem, but haven't started

Base: 137 IT managers at companies with 100 or more employees

## PCs

CONTINUED FROM PAGE 1

said year 2000 problems on the desktop will be minor, and 68% said they will be easy to find and fix. But more than half the companies have roped 20% or more of their information technology staff into the effort, and only one-third are reinforcing them with consultants.

Desktop PCs don't house the millions of lines of mission-critical code that mainframes do, but many essential end-user reports and spreadsheets lurk in every corner of a company. And the systems that host them often aren't under IT's constant supervision and control.

At Barclays, for example, the desktop workload includes about 45,000 user-created spreadsheets and databases in the U.S. and Canada. Overseas divisions of the company bring Barclays' total to 130,000 potentially problematic desktop files.

Most of the software that CNF Transportation Inc. has inventoried requires patches and upgrades to become compliant, said David L. Phelan, a spokesman for the Palo Alto, Calif.-based freight carrier. CNF is in the process of administering those patches in numerous locations worldwide.

Bowman's quest to find a few sharp needles in a haystack is typical of many companies' experiences. What's uncommon is that Bowman is a consultant at DMR Consulting Group Inc. in Edison, N.J. Most firms aren't hiring consultants to address their desktop environments, no matter how big the task.

"It's done so less than for the

large systems," said Andrew Bochman, an analyst at Aberdeen Group Inc. in Boston. "I think it's a 'not-as-big-a-deal' perception." Outside consultants and services aren't necessarily much help on the desktop because end-user applications are highly customized and require business expertise, according to Gartner Group Inc. analyst Jim Duggan.

In a mainframe environment, outsiders can fix millions of lines of code once they're up to speed on an application, but there are many more individual applications on desktops, each with a learning curve.

The Home Depot Inc. in Atlanta has used little outside help on year 2000 because it didn't think outsiders would have specific expertise, said Ron Kerr, senior manager of information systems. "There is a ramp-up time savings because we know the systems," he said.

Kerr said the hardware retailer has addressed all of its corporate desktops, where Microsoft Corp.'s Office suite is being upgraded to the more compliant '97 version. Now Home Depot is turning its focus toward the PCs in its 735 stores. Most of those will be easier to fix because they run simpler and fewer applications. Necessary BIOS upgrades or patches can be administered from a central site at headquarters.

Bowman, however, maintains that problems are usually apparent and that DMR consultants will talk directly with a user whenever nuances need to be understood. CNF used contractors because it wanted to retain its IT staff to provide the normal level of service. □



# CA forges ahead in IT services market

By Julia King

LOSING ITS \$9 billion bid for Computer Sciences Corp. (CSC) earlier this year hasn't deterred Computer Associates International Inc. from plowing ahead in the information technology services market.

Last week, the Islandia, N.Y.-based software company named Ajit Maira, a former management consultant, to head its new Business Assessment and Consulting Group. Maira said the new CA consulting group will compete directly with Andersen Consulting and other national consulting companies

that focus on business process re-engineering and IT.

Earlier this month, CA also acquired Aventura Systems, a Norwegian systems integrator specializing in electronic commerce. Aventura's offerings include an electronic supply-chain management service and outsourced business-to-business electronic-commerce service.

"CA is clearly not giving up their services strategy," said Marianne Hedin, an analyst at International Data Corp., a *Computerworld* sister company in Framingham, Mass.

But following its unsuccessful attempt to acquire CSC in

March, CA is pursuing that strategy in a more realistic manner, she said.

"CSC was an unwilling acquisition partner. CA was trying to bite off too much," she said. "Now, CA is acquiring smaller companies more methodically."

Maira said her new group at CA will apply a variety of technologies, including three-dimensional, computerized visualization techniques and intelligent agents, to continually assess its client companies' ongoing performance against various business goals and strategies.

For example, using 3-D techniques to represent data from a wide array of sources, "we can show clients what will happen to their business as various factors change," Maira said. A food company, say, could see how long-term weather patterns or soil conditions might affect sales over an extended period. □

## Unified messaging

CONTINUED FROM PAGE 1

The technology has progressed in recent product releases such as Unified Messenger for Exchange from Lucent Technologies Inc.'s Octel Messaging division, Northern Telecom Ltd.'s CallPilot communications server and AVT Corp.'s CallXpress, and in service offerings from the likes of Bell Communications Research Inc. and GTE Corp.'s GTE Internet-working unit.

Marova said collecting all incoming messages in one box is completely logical, but the technology has been slow to catch on because such systems are tough to cost-justify. "Companies gain in productivity and time spent retrieving messages, but that's tough to quantify," she said.

And the cost of implementing a unified messaging system on top of a company's phone system is expensive compared with voice messaging and the public branch exchange, Marova said.

### HOW IT WORKS

A unified messaging service integrates voice, E-mail and fax messaging. For a monthly fee, users are given a single in-box for all their messages. They can access the in-box and retrieve all types of messages from a telephone, PC, smart phone or palmtop computer.

According to Frost & Sullivan, it costs about \$8,000 to implement a unified messaging system with four ports vs. between \$4,000 and \$5,000 for a similar-size basic voice messaging system.

Although he said he's impressed by some of what the technology can do, Durwin Sharp, manager of global technology architecture at Houston-based Exxon Corp., said, "All this stuff is nice to have, but it's not imperative [to conduct business]. So economic justification is difficult."

But U.K.-based consultancy Ovum Ltd. paints a more optimistic picture. In a study released last week, Ovum predicted unified messaging will be a \$31 billion market by 2006.

Ovum's report saw the mar-

### Worldwide revenue projections for unified messaging services

1998	\$3M
2002	\$2.2B
2006	\$12B

Source: Ovum Ltd., London

ket taking off first among consumers and then among small to midsize businesses. A quarter of those smaller businesses will outsource the service, but most large companies will favor keeping a unified messaging system in-house, said analyst Roger Walton, a co-author of the report.

Finally, there's a critical mass of people who are PC- and Internet-savvy, said Jeannette Noyes, an analyst at International Data Corp., a *Computerworld* sister company in Framingham, Mass.

And for Internet service providers, unified messaging has become a new way to differentiate themselves from the local services market, she said. Moreover, there's more dependence on E-mail for mission-critical functions in business and more people using these communications systems, she added.

### SOME BELIEVERS

Some users are buying in. For instance, Leatherman Tool Group Inc., a multipurpose tool manufacturer in Portland, Ore., is using CallXpress to make it easier for its 250 employees to route and access messages.

For Leatherman employees, unified mail means "controlled, secure access to information, anywhere, anytime," said Norman Coder, information systems manager at the company. Employees can focus on the data itself rather than the technology they use to access that information, he said.

The mobility of CallXpress has resulted in improved productivity and cost savings at Leatherman, Coder said, "although they are difficult to quantify precisely."

But Marova said vendors will need to come down in price and add functionality on top of the unified in-box. □

## ERP

CONTINUED FROM PAGE 1

Mercedes-Benz U.S. was an early user of Baan Co.'s ERP applications in the automotive industry worked with Baan and IBM's consulting unit to develop auto-related functionality that now is being sold to other companies. Business users "have to be committed to change" to make ERP projects work, Zirbes said.

Leroy Allen, vice president of re-engineering at clothing maker VF Corp. in Greensboro, N.C., said his company's installation of an apparel/footwear release of SAP R/3 and companion products from other vendors is one of the largest investments that the \$5 billion company will make short of acquisitions.

VF, the maker of products such as Lee and Wrangler jeans, was instrumental in persuading SAP to develop the apparel/footwear add-on to R/3. But Allen said it waited for SAP's fourth batch of code before starting to install the software, which is scheduled for an initial rollout in April.

### MORE ONLINE

For resources, FAQs, user groups, articles and books related to SAP, visit *Computerworld online*.

[www.computerworld.com/more](http://www.computerworld.com/more)

### PREP WORK

Advice from users and analysts for buyers of new ERP applications:

- Don't rush purchase decisions based on vendor promises
- Match your expectations to what the software can handle
- Put in place strong project- and change-management skills
- Be realistic about installation schedules and budgets

Moving beyond the manufacturing realms that have been the main arena using ERP applications "is a pretty radical step for both the vendors and their customers," said Jim Shepherd, an analyst at AMR Research Inc. in Boston.

And it isn't a case of "SAP doing a bad job of this and everybody else doing a good job," Shepherd added. For example, he said, a software bundle that Oracle Corp. put together for consumer packaged goods companies has had a bumpy road because of a lack of tight integration among the different products.

ERP vendors also usually lack "the iron will to say no" to users

who may not be prepared for the rigors of installing a new application, said David Dobrin, an analyst at Benchmarking Partners Inc. in Cambridge, Mass. That can be dangerous because early users are basically acting as software test sites, he added.

Guarding against sales pitches that target inappropriate users or promise more than the software can deliver is "a challenge across the industry," said Don Drury, vice president of product marketing for Baan's BaanSeries software products.

"We're not in the business of going out and trying to force-fit software into markets," Drury said. "But it's easy to have a sales force that gets out there [and does that]. Public companies do have quarterly pressures that come to bear."

MJDesigns Inc., a chain of arts and crafts stores based in Coppell, Texas, in September was the first U.S. company to go live with SAP's R/3 release for retailers. Converting to the software "was sort of a non-event," said Colby Springer, the company's CIO.

But MJDesigns already had been using standard R/3 for 18 months when it made the switch. For users who don't have experience in configuring ERP systems, Springer said, the applications "have so many options in there that you can eat your lunch [on performance] very quickly." □





## The Back Page

## alt.cw

Dispatches & images from the fringes of the electronic frontier



## NORAD TRACKS SANTA'S FLIGHT

Santa's stratospheric travels on Christmas Eve will be tracked live at [www.noradsanta.org](http://www.noradsanta.org), the multimedia Web site of the North American Aerospace Defense Command (NORAD). The site will offer satellite images and audio reports. Hosted by IBM, the Santa-tracking site features graphics from Analytical Graphics Inc. in Malvern, Pa.

## Jagged Little Bill

Here's what happens when you plug a few random Microsoft-related words in to the Alanis Morissette lyric generator at [www.brunching.com](http://www.brunching.com):

I think antitrust lawsuits are a huge problem.  
I think judges are too much on my mind.  
I think monopolies have got a lot to do with why the world sucks.  
But what can you do?  
Blame it on Bill Gates.

I think browsers are gonna drive us all crazy.  
And recovered E-mails make me feel like a child.  
I think court decisions will eventually be the downfall of civilization.  
But what can you do? I said, what can you do?  
Blame it on Bill Gates.

— Roberta Fusaro

## Seven dreaded gifts

Sun Microsystems CEO Scott McNealy offers a list of gifts you don't want this year:

- 1 Anything that says "Love, Monica"
- 2 Bill Gates' new book, *E-mails I Don't Remember*
- 3 A Windows 2000 gift certificate: It isn't redeemable until 2010
- 4 *The Seven Daily Habits of Highly Humble People*, by Larry Ellison
- 5 MS-Risk: The Game of World Domination
- 6 MS-Monopoly: Guess whose face is on the money?
- 7 Bill & Bill's video: How to do Video Depositions

— Carol Sliwa

## THE FIFTH WAVE by Rich Tennant



"I can never remember — are the bubble lights VESA or PCI?"

## Inside Lines

## Seeing Green

Baan drew the ire of Wall Street analysts earlier this year because of questions about its accounting practices. Now the Dutch application vendor is in trouble with Germany's Green Party. Green politicians in the German state of Lower Saxony accused Baan of botching a software installation at seven technical colleges and demanded that the contract be scrapped. Baan's German subsidiary claims the problems were because of the project's complexity and says most of the issues have been resolved.

## Everybody get together

Installing SAP R/3 and several supply-chain management applications has been a moving experience for VF Corp. The clothing maker recently shifted its headquarters from Pennsylvania to Greensboro, N.C. — in part so senior executives could keep tabs on the systems work. VF's IT department already was based in Greensboro, along with two product divisions, and the company's CEO "wanted to be real close to this project," said Leroy Allen, vice president of re-engineering at VF. Allen now meets with VF's operating committee every Monday at 8 a.m. to talk things over.

## IT out at MCI WorldCom

Rumors heated up last week that MCI WorldCom is dumping both its internal IT operations and its IT consulting arm. Word is that Electronic Data Systems will take over the internal systems and billing operations. The SHL Systemhouse consultancy, its revenue dropping, is supposed to go to EDS too — or maybe IBM or even Compaq. The company won't confirm any of the deals, but MCI WorldCom CEO Bernard Ebbers has promised 20% annual sales growth. And that means operations that aren't bringing in the bucks have to go.

## Just good friends

The wedding is off, but Compaq and Sequent Computer Systems say they're still friends, sort of. Last January, the two companies announced a partnership to add Sequent's scalability and reliability to a version of Unix being developed with Compaq for Intel's forthcoming Merced chip. But 10 months later, Sequent suddenly said it was eloping — er, working with IBM and SCO in a similar effort instead. Compaq now says it never needed the Sequent technology anyway. Both companies insist that they're still "talking" and "exploring areas" where they can work together — though neither will explain exactly how.

## If you want it done right . . .

Users of Visix Software Inc.'s Galaxy products have run a do-it-yourself support group since last February, when the software development tool maker went out of business. But they don't sound too pleased now that Ambiccia Information Systems has taken over Visix's product support. "It doesn't bode well for their support if it takes over a week to respond [to me] with an E-mail that doesn't tell me anything I didn't already know," groused one user.

## Overheard

Princeton University professor Edward Felten, testifying about Microsoft's urge to integrate: "A Web browser is like a screwdriver . . . [but] there is no benefit that I get from having the screwdriver glued into my hand." . . . An anonymous CIO, grumbling about Compaq's service quality: "IBM sends a warm body, somebody with intelligence, once in a while."

A Microsoft memo that talked about sending a "hit team" after IBM wasn't hard for Bill Gates to explain away in his videotaped deposition at Microsoft's antitrust trial last week. Hit team just meant salespeople, he said. No matter — the New York Post still headlined its online story: "M'soft Sicced 'Hit Men' On Rivals: Gov't." News editor Patricia Keefe won't be writing any more headlines until Jan. 4, when we're back from our annual break. But she will return ready for your news tips and tidbits. E-mail her at [patricia\\_keefe@cw.com](mailto:patricia_keefe@cw.com) or call (508) 820-8183.



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